

CA20NER59

74H18

v. II

W1 - 20

LIBRARY

THE HALTON-WENTWORTH WATERFRONT STUDY

volume 2

data bank index
and supporting material
for recommended
development concepts

Prepared for the
Waterfront Co-ordinating and Technical Committees
By
Acres Consulting Services Limited
Project Planning Associates Limited

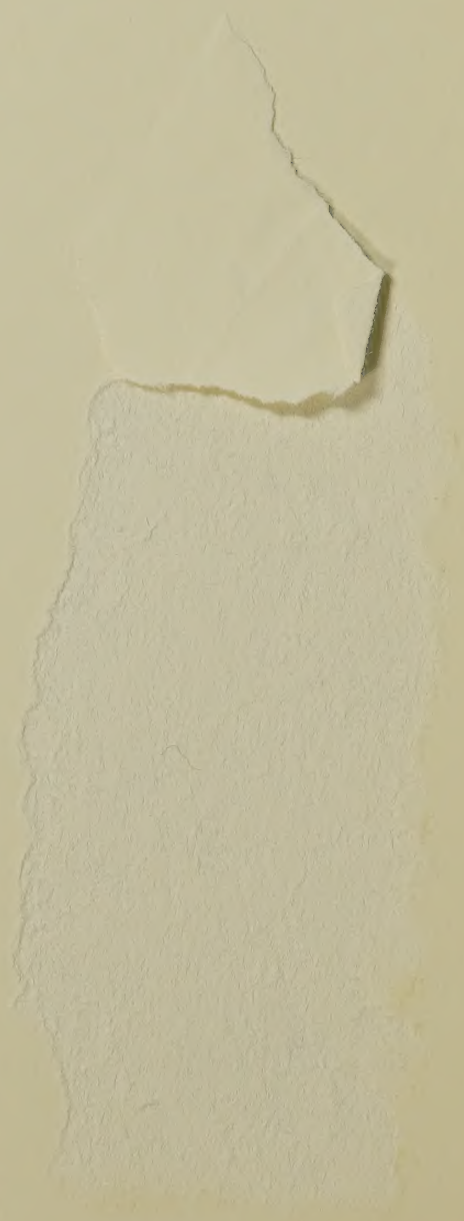
CITY HALL LIBRARY

W

56

.71314 v. 2

51974



CITY HALL LIBRARY

TITLE _____

AUTHOR _____

SUBJECT _____

NUMBER _____

THE HALTON-WENTWORTH
WATERFRONT STUDY

VOLUME 2
DATA BANK INDEX AND
SUPPORTING MATERIAL FOR
RECOMMENDED DEVELOPMENT CONCEPTS

Prepared for the Coordinating and
Technical Committee
by
Acres Consulting Services Limited
and
Project Planning Associates Limited

September 1974

C O N T E N T S

	<u>Page Number</u>
LIST OF TABLES	
LIST OF FIGURES	
LIST OF PLATES	
 CHAPTER 1 - DATA BANK	
Introduction	1
Books and Files	3
Maps	28
Unit	47
Subject	86
Additional Bibliography	100
 CHAPTER 2 - SUMMARIES OF CRITERIA AND LEGISLATION	
Water Quality Criteria in Ontario	113
Air Quality Standards in Ontario	118
Hamilton Harbour Water Chemistry	121
Shore Protection Techniques	124
Legislation Affecting Waterfront Development	131
Guidelines for Use by Developers on River and Lakefront Floodlands	140
 CHAPTER 3 - DISCUSSION OF SELECTED RECOMMENDATIONS IN VOLUME ONE	
Open Space Alternatives	146
Shoreacres and Tuck Creek	146
Elizabeth Gardens	147
Anchorage Site	148
Joshua's Creek Park	148
Fifty Point Conservation Area	149
Confederation Park	149
Recreational Harbour in Halton Region	149
Bronte Harbour	149
Removal of Berm in Hamilton Harbour	150
New Regional Boundary in Hamilton Harbour	150

LIST OF TABLES

	<u>Page</u>
Schedule 1 - Standards For Emitted Contaminants	119
Schedule 2 - Criteria For Desirable Ambient Air Quality	120

LIST OF FIGURES

Figure 1 - H Pile and Concrete Beam Groyne	126
Figure 2 - Concrete Trapezoid Groynes	126
Figure 3 - Rubble Mound Groyne	127
Figure 4 - Breakwater	127
Figure 5 - Infilled - Island Breakwater	128
Figure 6 - Rubble Seawall	129
Figure 7 - Rubble Seawall	129

LIST OF PLATES

	<u>Precedes Page</u>
The Halton Wentworth Waterfront Study - Key to Planning Units	48

INTRODUCTION

The data Bank consists of all data collected for the Waterfront Study. It includes maps, records, inventory data and technical reports; and all relevant working papers, reports and maps prepared by the consultants during the study.

Organization and Coding of Data

Nineteen classes of data have been established, based on the research carried out in the inventory stage of the study.

00. General (when a variety of subjects are contained in a single document).
01. Limnology (lake currents, lake bottom topography, lake temperature).
02. Hydraulics (lake levels and wave data, littoral drift, erosion and sedimentation).
03. Hydrometeorology (climate, wind, stream runoff, stream erosion).
04. Geology
05. Water Quality
06. Air Quality
07. Biology (fish and wildlife).
08. Landscape (includes land capability, Conservation Authority reports and Royal Botanical Gardens information).
09. Land Use and Planning
10. Economics, Industry and Demography
11. Recreation
12. History and Touring
13. Infrastructure (sewers, water supply, roads, railways, pipelines, utilities).
14. Marine and Harbour
15. Local Government and Finance

16. Public Participation
17. Legislation
18. Unit files containing aerial photography (1" = 1,000') zoning information, special data applicable to specific units and field notes re: land use, water and air condition, erosion etc. on unit maps (1" = 400').
19. Newspaper clippings

Each item in the data bank has a four-digit file number based on the above classification. For example, the booklet "Guidelines and Criteria for Water Quality Management in Ontario" is item 05.02 to indicate that it is item number two in the water quality section. With minor exceptions, maps are numbered the same way, but are stored separately and have the prefix "M" before the four-digit file number. Map M.12.01, for example, is the first map in the History and Touring section.

Two cross-indexes are provided:

- a) Unit Index which lists all references to each of the 38 planning units in the study area (see Key Map in Section 4).
- b) Subject Index which lists all references to each subject covered in the final report (June 1974), including: shore protection; water quality; air quality; stream valley protection; fish and wildlife, estates housing and subdivisions; parks and waterfront access; recreational harbours; touring and points of interest; the Beach area; Hamilton Harbour.

BOOKS AND FILES INDEX

Books and files are classified under nineteen headings as listed in the foregoing introduction.

00. General

- 00.00 The Halton Wentworth Waterfront Study - Volume 1
 Acres & PPAL, June 1974
- 00.01 Summary, June 1974
- 00.02 Draft Report Vol. 1 Background to Planning HWWS,
 September 1973 *
- 00.03 Report Vol. 2 Goals and Alternatives HWWS,
 September 1973 *
- 00.04 Draft Report Vol. 3 Maps, by Unit Areas, HWWS
 September, 1973 *
- 00.05 Alternatives, by Unit Areas, 1972
- 00.06 Alternatives - Summary, by Municipalities, 1972
- 00.07 Environmental Summary - by Unit Areas
- 00.08 HWWS Work Schedule and Program

* Contains recommendations that are superseded by the
final report of June 1974

01. Limnology

- 01.00 Limnology Research, Working Paper No. 1,
Halton-Wentworth Study, December, 1972.
- 01.01 Great Lakes Institute, Data Catalogue and
Methods for 1960 to 1970.
- 01.02 Lake Ontario Surface Water Temperature.
Department of the Environment, Canada,
Atmospheric Environment Service, Toronto,
1972.
- 01.03 Lake Ontario Soundings

02. Hydraulic Research

- 02.00 Hydraulic Research, W.P. #2 HWWS, Dec. 1972
- 02.01 Wave Height - Toronto - Station 65 - 1972
(Analog Tapes)
- 02.02 Currents and Temperature Readings, 1971.
(Computer Print-outs)
- 02.03 Report on Preliminary Functional Design of
Flood Prevention Channels on Tuck Shore
Acres - Appleby Sheldon Creek, 1967.
- 02.04 Shore Protection Inventory by Gaven Gardiner,
March 1974; pictures and comments on eroding
areas and protection structures.

03. Hydrometeorology

- 03.01 Mean Monthly Wind Speed Frequencies - Port
Weller (1967-70) Hamilton RBG (1963-71)
- 03.02 Meteorological Data for Hamilton, Malton,
Vineland and Eastern Canada
- 03.03 TEMPERATURE - Hourly, for Surface and Bottom
Burlington. 1972 Environmental Data Service
at the Canada Centre for Inland Waters
(computer print-out).
- 03.04 WIND DATA TABULATION. Burlington Pier &
Hamilton Marine.

Current and Temperature Readings, 1971.
(Computer Print-outs) see 02.02

04. Geology

04.00 Geology Research, W.P.#4, HWWS, Dec. 1972.

04.01 "Report on Lakeshore Erosion - Lake Ontario,
from Niagara to Cobourg, May 1, 1949," by G.B.
Langford (Professor of Mining Geology,
University of Toronto), prepared for the
Ontario Department of Planning and Development.

05. Water Quality

- 05.00 Water Quality Research, W.P. #5, HWWS, December 1972.
- 05.01 Bay Report, 1972, Notes on Coliform counts and others.
- 05.02 Guidelines and Criteria for Water Quality Management in Ontario. Ministry of the Environment. Feb. 1973.
- 05.03 Hamilton Wentworth Water Supply and Pollution Control Study 1972. Ontario Ministry of the Environment.
- 05.04 Hamilton Wentworth Water Study & Pollution Control Study - Availability and Use of Water Resources, 1972. Ontario Ministry of The Environment.
- 05.05 Lake Bathing Beaches. Report of water sample(s) taken between the canal and Gray's Road.
- 05.06 Outfalls and Intakes - Lake Ontario - Ministry of the Environment
- 05.07 "A Sanitary Survey of the Creeks within the Hamilton Region Conservation Authority, by D.H. Matheson, Hamilton Municipal Laboratories, 1971.
- 05.08 Water Pollution Surveys. Hamilton Municipal Laboratories Annual Reports, 1964, 1968, 1969, 1970, 1971.
- 05.09 Water Purification - Hamilton Municipal Laboratories Annual Reports, 1965, 1966, 1967, 1969, 1970, 1971.
- 05.10 Water Quality Data - OWRC
- 05.11 Water Quality Information - Burlington Halton Health Unit, 1972, O.W.R.C.
- 05.12 Water Supply, Sewage Treatment and Industry Ministry of Environment Statistics for Hamilton, Waterdown, Ancaster, Stoney Creek, Dundas, Saltfleet, Oakville, Burlington.
- 05.13 Steady State Dissolved Oxygen Simulation Model for Hamilton Harbour.

06. Air Quality

06.00 Air Quality Research, W.P. #6, HWWS,
December, 1972.

07. Biology

07.00 Biological Research, W.P. #7, HWWS, Dec. 1972

08. Landscape

- 08.00 Landscape Research, W.P. #8, HWWS, Dec. 1972
- 08.01 Bronte Creek Provincial Park Master Plan.
Ministry of Natural Resources, 1972.
- 08.02 Canada Land Inventory
"Land Capability Classification for Outdoor
Recreation," Report No. 6, 1969.
- 08.03 Canada Land Inventory
"Soil Capability Classification for Agriculture,"
Report No. 2, 1969.
- 08.04 Canada Land Inventory
"Soil Capability for Agriculture (map)."
- 08.05 Canada Land Inventory
"Land Capability for Recreation (Map),"
- 08.06 Canada Land Inventory
"Land Capability for Wildlife Ungulates (map),:
- 08.07 "Cumulative Checklist of the Aquatic Vascular
Plants of the Cootes Paradise 1972," by J.B. Lord
- 08.08 An Environmental Appraisal of Halton and
Wentworth Counties, 1972 by Hamilton Federation
of Environmental Groups.
- 08.09 Halton Region Conservation Authority. Annual
Report, 1971.
- 08.10 Halton Region Conservation Authority. Notes on
Administration and Financial statements.
- 08.11 Hamilton Region Conservation Authority.
Annual Report 1970
- 08.12 Hamilton Region Conservation Authority Annual
Report, 1971
- 08.13 Hamilton Region Conservation Authority Annual
Report, 1972
- 08.14 Hamilton Region Conservation Authority Annual
Report, 1973.
- 08.15 Hamilton Region Conservation Authority, Technical
Report, Summary of 1972, Activities.
- 08.16 Metropolitan Toronto and Region Conservation
Authority, 1957-1967

- 08.17 Metropolitan Toronto and Region Conservation Authority, 1967-1968.
- 08.18 How do we manage the Niagara Escarpment?
(A circular concerning a Task Force on the Gertler Report).
- 08.19 Royal Botanical Gardens Pub'ns
The Garden's Bulletin:
June '61 - A Strange Project for a Botanical Garden
Jan. '63 - Cootes Paradise Sanctuary
Aug. '66 - Pond Life
Dec. '67 - The Nature and Function of Herbaria
June '69 - Plant Life and Air Pollution
Mar. '70 - A Short History of Cootes Paradise
Mar. '71 - Giant Trees of the Gardens
Dec. '71 - R.B.G. Historical View
Oct. '72 - Ornamental Spruces
Dec. '72 - The Eastern Hemlock
- 08.20 Royal Botanical Gardens Pub'ns
Interpretive Leaflets
The Nature Interpretive Centre
No. 1 - 172 Paradise Point Tower
- 08.21 Royal Botanical Gardens Pub'ns:
Special Bulletin 1972
- 08.22 Royal Botanical Gardens Pub'ns:
Special Bulletin 1973
- 08.23 Royal Botanical Gardens Pub'ns:
Technical Bulletins
No. 1 Aquatic Plants for Fish and Wildlife
No. 3 The Common "Solidago" Species
No. 4 Check list of Spontaneous Vascular Flora
No. 5 Trilliums of Ontario
- 08.24 Slides on Landscape Research

09. Land Use and Planning

- 09.00 Land Use and Planning Research, W.P. #9,
HWWS, December 1972.
- 09.01 Bronte Plan - December 1972.
- 09.02 Burlington Planning Area Official Plan
Amendment 49
- 09.03 Burlington Zoning By-law: Amendment 4000-4
- 09.04 The Town of Dundas Official Plan: Amendment
68 (Part of the Official Plan of the Hamilton-
Wentworth Planning Area)
- 09.05 The Town of Dundas Zoning By-law
- 09.06 Hamilton: The Impact of Regional Growth on
the Hamilton Transportation System - Discussion
Paper - Kates, Peat, Marwick & Co. 1972
- 09.07 Hamilton- Neighbourhood Planning in Developed
Areas. Planning Department, August 1972
(pamphlet)
- 09.08 Hamilton - Neighbourhood Design in Undeveloped
Areas. A Planning Concept. Planning Department
December 1972 (Pamphlet)
- 09.09 City of Hamilton Zoning By-law (Notes)
- 09.10 Housing Conditions: 1971 Oakville
- 09.11 Oakville: Official Plan of the Oakville
Planning Area
- 09.12 Old Oakville Official Plan Review 1972
- 09.13 Town of Oakville Zoning By-law
- 09.14 Saltfleet: Official plan, Office Consolidation
1969.
- 09.15 Saltfleet: The Western Development Area Zoning
By-law: #2175
- 09.16 Saltfleet By-law and Map #2347
The Wihona - Fruitland Area Zoning By-law
- 09.17 The Township of West Flamborough Official Plan

- 09.18 West Flamborough: Amendment No. 62 to the Official Plan.
- 09.19 West Flamborough: Amendment No. 83 to the Official Plan.
- 09.20 The Waterfront Plan for the Metropolitan Toronto Planning Area. 1972-1976
- 09.21 Waterfront Plan - Toward a Total Concept Central Ontario Joint Planning Board Nov. 1970
- 09.22 Waterfront Plan - Toward a Total Concept Central Ontario Joint Planning Board. Supplement '1', "Central Sector". May 1971
- 09.23 Anchorage Site File
- 09.24 A Development Program for the Oakville Harbour, 1966.
- 09.25 Part of 1969 Official Plan for the Beach Strip of the Hamilton Planning Area.
- 09.26 Natural Resource Protection through shoreline Regulation: Wisconsin. Article from "Land Economics" Journal, by Douglas A. Yanggen and Jon A. Kusler.
- 09.27 Downtown Parking, Oakville, 1968.
- 09.28 People without Beaches - A Report on Public Recreational Lakeshore Needs in the Niagara Region.

10. Economics, Industry & Population

- 10.00 Economic, Industrial and Demographic Research
W.P. #10 HWWS, December 1972.
- 10.01 Agenda for Action - A Community Development
Program, 1972 - Hamilton & District Chamber
of Commerce.
- 10.02 Hamilton Transportation Strategy Study -
Population & Economic Base Discussion Paper
- 10.03 Hamilton
Population Growth and Distribution, City of
Hamilton Planning Dept. 1968
- 10.04 "Recent land use changes in the Niagara Fruit
Belt" by R.R. Krueger. U. of Waterloo,
Dept. of Geography.
- 10.05 Niagara, 1966, Ontario Dept. of Economics and
Development
- 10.06 Oakville: Brochure
- 10.07 Oakville: List of Industries - Industrial
Development Department
- 10.08 Town of Oakville Population and Development
Forecast, Revised 1971
- 10.09 Some Quick Facts About Hamilton
- 10.10 Survey Dundas Report. Opportunities for
Youth Project 1972.

11. Waterfront Recreation

11.00 Recreation Research, W.P. #11, HWWS,
December, 1972.

12. History & Touring

- 12.00 Historical Research, W.P. #12, HWWS
December 1972.
- 12.01 Touring and Points of Interest, W.P. #12 a
HWWS, April 1974
- 12.02 Architectural Review and Evaluation of
buildings in Durand, Central, Cooktown,
Beasley Neighbourhoods. Hamilton Anthony
Adamson
- 12.03 "The Governor's Road, Desjardins Canal and
Burlington Heights," by H. Robertson; (in:
Wentworth Historical Society, Journal and
Transactions. V.5, 1908, pp. 11-50.)
- 12.04 Illustrated Historical Atlas of the County
of Halton, 1877; published by Walker and
Miles, Toronto.
- 12.05 Oakville Historical Society - List of Bldgs.
built before 1880.
- 12.06 "The Province of Ontario - A History 1615-
1927," by J.E. Middleton; Toronto, the
Dominion Publishing Company Ltd.
- 12.07 Victorian Architecture in Hamilton, The
Architectural Conservancy of Ontario.
- 12.08 Wentworth Landmarks, Pen and Pencil Sketches.
A series of Articles Descriptive of Quaint
Places and Interesting Localities in the
Surrounding County. Published by the
Spectator Printing Company, 1897, reprinted
by the Ryerson Press, Toronto, 1967.
- 12.09 Brochures concerning Points of Interest in
the Halton-Wentworth area.
- 12.10 "The Garden of Canada; Burlington, Oakville and
District" by Martha Craig; Toronto, William
Briggs, 1902.

13. Infrastructure

- 13.00 Infrastructure Research, W.P. #13, HWWS, December 1972.
- 13.01 Infrastructure Analysis: Hamilton-Burlington Beach Strip, W.P. #13.1, HWWS, March 1973.
- 13.02 Airport Systems (Newsletters)
- 13.03 Communication Facilities, Transport Canada (data)
- 13.04 Minimum Requirements for Airports, Nov. 1963, Ministry of Transport
- 13.05 "Oakville Traffic Planning Report," 1965-1985, Damas and Smith Ltd.
- 13.06 Railways in Hamilton, Discussion Paper, 1972, by Kates, Peat, Marwick & Co.
- 13.07 Road Program - Halton County - 1972
- 13.08 Saltfleet Community Development - Traffic Volumes, Transit Systems (Two Diagrams).
- 13.09 Proposed Sewage Treatment Plant, Saltfleet Twp. B.W. Vanderbrug, 1973. Hamilton Region Conservation Authority Technical Report.
- 13.10 Proposed Redhill Creek Expressway, F.G. Shaw, 1973 Hamilton Region Conservation Authority Technical Report.
- 13.11 Q.E.W. Feasibility Study: Guelph Line to Highway 20 (i.e. across the Beach).
- 13.12 Outfall and Intake Coding Description.
- 13.13 30 N.E.F. Contours, Runway 11/29, Hamilton
- 13.14 Municipal Water and Sewer Data - Hamilton, Waterdown, Stoney Creek, Dundas, Saltfleet, Ancaster Twp. Oakville, Burlington, and other communities to the north.
- 13.15 Hamilton Transportation Strategy Study "Discussion Paper on Railways in the City", September 1972.
- 13.16 Discussion Paper "The Impact of Regional Growth on the Hamilton Transportation System", Kates, Peat, Marwick & Co., November 1972.

14. Marine and Harbour

- 14.00 Marine and Harbour Research, W.P. #14, HWWS, December 1972.
- 14.01 Bay Development Concept by the Hamilton Planning Board, 1971.
- 14.02 Costs for Construction of Harbour Walls, Letter, Public Works Canada, Ontario Region
- 14.03 Hamilton-Dredging (Widen Main Approach channel to Strathe - Anne Avenue Slip). Drawing of after Dredging Sounding Survey, 1972.
- 14.04 Hamilton Harbour Commissioners Annual Reports for the Port of Hamilton from 1967-1971.
- 14.05 Land Fill in Lake Ontario Feasibility Study, 1970.
- 14.06 Port facilities in the City of Hamilton, discussion paper, by Kates, Peat, Marwick & Co.
- 14.07 The St. Lawrence Seaway. Report of the Engineering Committee of International Assoc. of Great Lakes Ports, presented at the Annual Meeting held June 1972, by Ken Gilbert
- 14.08 Tariff of Dockyards Rate and Regulation, 1972. Hamilton Harbour Commissioners, Hamilton, Ont.
- 14.09 Water Levels - Hamilton Harbour Dept. Public Works, Canada

15. Local Government & Financial Research

- 15.00 Public Administration, Financial Research
W.P. #15, HWWS, December 1972.
- 15.01 Hamilton-Burlington-Wentworth, Local
Government Review, Data Book, June 1968.
- 15.02 Hamilton-Burlington-Wentworth Local Gov't
Review, Report and Recommendations, Nov. 1969
- 15.03 Brief to the Hamilton-Burlington-Wentworth
Local Government Review (3 volumes, County
of Wentworth).
- 15.04 Assessment Research Record Book
- 15.05 Burlington - Five Year Capital Budget - 1972-
1976
- 15.06 Hamilton - 5 year Capital Budget Program
1972-1976
- 15.07 Oakville - Capital Forecast: 1972-1976
By-law No. 1972-20
- 15.08 Oakville - Financial Report, 1971
- 15.09 Saltfleet: Financial Statement, December 31/71
- 15.10 Oakville - Property Sales
- 15.11 Halton Region Conservation Authority
 - Financial Statements, Dec. 1971
 - Organization

16. Public Participation

- 16.00 Public Participation - Group Workshops
(Residents) W.P. #16.1 HWWS, January 1973
- 16.01 Industrial and Commercial Survey, W.P.
#16.2 HWWS January 1973.
- 16.02 In-Field Resident Surveys W.P. #16.3, HWWS
January 1973.
- 16.03 History and Recreation W.P. #16.4 HWWS,
January 1973.
- 16.04 Hotline Analysis: Interim Report, W.P.
#16.5 HWWS, January 1973.
- 16.05 Public Relations - Interim Report, W.P.
#16.6, HWWS January 1973
- 16.06 Work Program and Organization
- 16.07 Study Groups
- 16.08 Public Meetings
- 16.09 Public Response and Briefs
- 16.10 Research Papers
- 16.11 Special Interest Groups

17. Legislation

- 17.01 Bill 128, An Act to provide for Planning and Development in Ontario, 1973
(The Ontario Planning and Development Act 1973)
- 17.02 Bill 129, An Act to Provide for Planning and Development of the Niagara Escarpment and its vicinity.
- 17.03 Bill 151, An Act to Establish the Regional Municipality of Halton.
- 17.04 Bill 155, An Act to Establish the Regional Municipality of Hamilton-Wentworth.
- 17.05 The Conservation Authorities Act, 1971.
- 17.06 The Conservation Authorities Act, - Regulation 118 (Ontario Regulation 56/69), Fill and Construction - Hamilton Region.
- 17.07 The Conservation Authorities Act Regulation Concerning Fill, Construction and Alteration to Waterways - Halton Region.
- 17.08 Conservation Authorities Act Regulation concerning the Use by the Public of Conservation areas.
- 17.09 Order-in-Council - OC 2881/72 - designating area under jurisdiction of Hamilton Region Conservation Authority
- 17.10 The Hamilton Harbour Commissioners Act 1912.
- 17.11 Harbours, Wharves, etc. - Municipal Act - Sec. 377, p. 43-50.
- 17.12 Marina Policy, Federal Government
- 17.13 Navigable Waters Protection Act. R.S., C. 193, S. 1
- 17.14 The Niagara Parks Act, R.S.O. 1970 Ch. 298
- 17.15 The Parks Assistance Act, Ch. 337

- 17.16 Pollution Abatement Incentive Act, 1970.
- 17.17 The Royal Botanical Gardens Act, 1941.
- 17.18 Special Agreement Re: Wildlife Management at Valens Conservation Area, Jan. 1973.
- 17.19 The St. Clair Parkway Commission Act, 1966.
- 17.20 The St. Lawrence Parks Commission Act, R.S.O. 1970 Ch. 447.
- 17.21 The Environmental Protection Act S.O. 1971 ch. 86.
- 17.21a Bill 37, An act to amend the Environmental Protection Act.
- 17.22 Excerpt from "The Territorial Division Act", RSO 1970, ch 458.
- 17.23 The Beds of Navigable Waters Act, RSO 1970, ch. 41.
- 17.24 Regulations Made under the Air Pollution Control Act - Sept. 1972.
- 17.25 The Planning Act - Jan. 1974.
- 17.26 Bill 88, An Act to Amend the Planning Act, 1974.
- 17.27 Bill 130, The Parkway Belt Planning and Development Act, 1973.
- 17.28 The Parkway Belt: West; Policy.

18. Unit Files

Files 18.01 to 18.38 contain aerial photography at 1" = 1,000 feet, and may contain zoning, official plan or other information on each of the 38 units (see "Key to Units" attached and "Key Plan of Study Area Units" in Section 4 "UNITS".)

18. Key to Units

- 18.01 Unit 1 - Oakville - Joshuas Creek (Winston Churchill Blvd/Ninth Line Road).
- 18.02 Unit 2 - Oakville - Gairloch Gardens (Ninth Line to Chartwell Road).
- 18.03 Unit 3 - Oakville - Town of (Oakville Harbour - Chartwell Road to Kerr Road).
- 18.04 Unit 4 - Oakville - Appleby College (Kerr Road to Fourth Line).
- 18.05 Unit 5 - Oakville - Coronation Park (Fourth Line to Third Line).
- 18.06 Unit 6 - Oakville - Bronte (Third Line to Bronte Rd)
- 18.07 Unit 7 - Oakville - Shell Park (Bronte Road to Burloak Drive).
- 18.08 Unit 8 - Burlington - Appleby Creek (Burloak Drive to Appleby Line).
- 18.09 Unit 9 - Burlington - Shore Acres Creek (Appleby Line to Walkers Line).
- 18.10 Unit 10 - Burlington - Sioux Lookout Park. (Walkers Line to Guelph Line).
- 18.11 Unit 11 - Burlington - Rambo Creek (Guelph Line to Brant Street).
- 18.12 Unit 12 - Burlington, City of (Brant Street to Maple Avenue).
- 18.13 Unit 13 - Burlington, Beach (North Shore Blvd. E., to Burlington Canal).
- 18.14 Unit 14 - Burlington - Aldershot (Maple Avenue to Eagle Drive).
- 18.15 Unit 15 - Burlington - Aldershot (Eagle Drive to La Salle Park Road).
- 18.16 Unit 16 - Burlington - Aldershot (La Salle Park Road to Unsworth Avenue).
- 18.17 Unit 17 - Burlington - Royal Botanical Gardens (Unsworth Avenue to Town Line).
- 18.18 Unit 18 - R.B.G. to Cootes Paradise (Rock Garden & Arboretum to Burlington Heights Canal)

- 18.19 Unit 19 - Dundas - R.B.G. to Cootes Paradise
(Dundas Town Line to HEPC).
- 18.20 Unit 20 - Dundas - Town of, (North of Desjardins
Canal).
- 18.21 Unit 21 - Dundas - Town of, (South of Desjardins
Canal to HEPC).
- 18.22 Unit 22 - Hamilton - Cootes Paradise & McMaster
University. (HEPC to Churchill Field).
- 18.23 Unit 23 - Hamilton - Cootes Paradise & Burlington
Heights (Churchill Fields & Dundurn Castle).
- 18.24 Unit 24 - Hamilton - C.N.R. Yards to Royal
Hamilton Yacht Club.
- 18.25 Unit 25 - Hamilton - Industrial Area (from
Wellington Street to Wentworth St. North).
- 18.26 Unit 26 - Hamilton - Steel Company of Canada.
- 18.27 Unit 27 - Hamilton - Dofasco to Firestone.
- 18.28 Unit 28 - Hamilton - Steel Company of Canada
(Windermere Basin).
- 18.29 Unit 29 - Hamilton - Burlington Beach Strip
(Drom Dunraven Avenue to Burlington Street
Interchange).
- 18.30 Unit 30 - Hamilton - Burlington Beach Strip
(Burlington Canal to Dunraven Avenue).
- 18.31 Unit 31 - Hamilton - Confederation Park -
Redhill Marsh.
- 18.32 Unit 32 - Hamilton - (Confederation Park to
Grays Road).
- 18.33 Unit 33 - Stoney Creek (From Grays Road to
Millen Road).
- 18.34 Unit 34 - Stoney Creek - Cherry Beach.
- 18.35 Unit 35 - Stoney Creek (Fruitland Road to
Glover Road).
- 18.36 Unit 36 - Stoney Creek (Glover Road to
Lewis Road).
- 18.37 Unit 37 - Stoney Creek (Lewis Road to Fifty
Road).
- 18.38 Unit 38 - Stoney Creek (Fifty Road to Twp.
Boundary).

MAPS *

Maps have been classfied as follows:

- M.00 Base Maps
- M.01 Limnology
- M.02 Hydraulics
- M.03 Hydrometeorology
- M.04 Geology
- M.05 Water Quality
- M.06 Air Quality
- M.07 Biology
- M.08 Landscape
- M.09 Land Use and Planning
- M.10 Economics, Industry and Demography
- M.11 Recreation
- M.12 History and Touring
- M.13 Infrastructure
- M.14 Marine and Harbour
- M.15 Local Government and Finance
- M.16 Planning Concepts

* Rolled maps are stored in the special map file;
folded maps are stored in the filing drawers.

M.00 Base Maps

- M.00.01 Key Plan of Study Area Units, $1\frac{1}{4}"=1\text{mi.}$, $1=25,000$
- M.00.02 Base Map - County Boundaries, Main Roads
 and Railways, Built-up areas. $1\frac{1}{4}"$ to 1 mile.
- M.00.03 Base Map - Topography ($1\frac{1}{4}"$ to 1 mile)
- M.00.04 Base Map - Topography ($1\frac{1}{4}"$ to 2 miles)
- M.00.05 Base Map - Topography - Western Lake Ontario
 from Oshawa to Niagara Falls.
- M.00.06 Base Map. South Shore. $1" = 1,000'$
- M.00.07 Base Map. North Shore (Bronte to Burlington)
 $1" = 1,000'$
- M.00.08 Base Map. Hamilton Harbour. $1" = 1,000'$
- M.00.09 Base Map. North Shore East Sector $1" = 1,000'$
- M.00.10 Base Map. $1 = 50,000$
- M.00.11 Base Map. (Toronto to Niagara Falls)
- M.00.12 Topo. $1 \text{ in.} = 400 \text{ ft.}$ Cootes Paradise
- M.00.13 Land Use. $1 \text{ in.} = 400 \text{ ft.}$ South Aldershot
- M.00.14 Land Use. Burlington Downtown
- M.00.15 Land Use. Burlington Beach
- M.00.16 Land Use. Burlington Lakeshore area
- M.00.17 Topo. $1" = 1,000'$. Stoney Creek
- M.00.18 Topo. $1" = 1,000'$. Stoney Creek

M.00 Base Maps (Continued)

- M.00.19 Topo. 1" = 1,000'. Stoney Creek
- M.00.20 Set of 1" = 200' topo sheets for entire study area
- M.00.21 Set of 10 Cadastral maps, 1" = 200'
- *M.00.22 Military City Map of Hamilton 1" = 25,000'
- *M.00.23 HWWS Area, 1" = 25,000' Topo Sheets
- *M.00.24 HWWS Area, 1" = 50,000' Topo Sheets
- M.00.25 Panel Base. Set of 38 Unit areas. 1" = 400'
- M.00.26 Plan of South Shore Estates (Saltfleet)
 1" = 100' (Survey Map).
- M.00.27 HWWS Goals Plan 1:25,000

*These are prints only.

M.01 Limnology

M.01.01* Water Levels - County of Wentworth (3 sheets)

M.01.02* Water Levels - County of Halton (3 sheets)

M.03 Hydrometeorology

- M.03.01 Precipitation January
- M.03.02 Precipitation April
- M.03.03 Percipitation July
- M.03.04 Percipitation October
- M.03.05 Mean Daily Temperatures January
- M.03.06 Mean Daily Temperatures April
- M.03.07 Mean Daily Temperatures July
- M.03.08 Mean Daily Temperatures October
- M.03.09 Watershed Modifications North Shore East Sector
- M.03.10 Watershed Modifications North Shore West Sector
- M.03.11 Watershed Modifications Hamilton Harbour
- M.03.12 Watershed Modifications South Shore
- M.03.13 Flood Plains & Valley Limits, North Shore East Sector
- M.03.14 Flood Plains & Valley Limits, North Shore West Sector
- M.03.15 Flood Plains & Valley Limits, Hamilton Harbour
- M.03.16 Flood Plains & Valley Limits, South Shore

M.04 Geology

M.04.01 Geology

M.06.01 Hamilton Emissions. Winter Day. Pounds
Particulate Per Day Per Sq. Km.

M.06.02 Hamilton Emissions. Winter Day. Pounds
SO₂ Per Day Per Sq. Km.

M.06.03 Hamilton Emissions. Winter Day. Pounds
NOX Per Day Per Sq. Km.

M.06.04 Hamilton Emissions. Winter Day. Pounds
CO Per Day Per Sq. Km.

M.06.05 Hamilton Emissions. 1970 Annual Average
Soiling Index in COH units.

M.06.06 Hamilton Emissions. July 1970. Average
Soiling Index in COH Units.

M.06.07 Hamilton Emissions. 1970 Maximum 24 hour
Soiling Index in COH units.

M.06.08 Number of Days Soiling Index Exceeds 24
Hours.

M.06.09 Number of Days Soiling Index Exceeds 24
Hours. Criterion of 1.0 COH's in 1970.

M.08 Landscape

M.08.01 Landscape Survey. Sector 1 - Oakville

M.08.02 Landscape Survey. Sector 2 - Burlington

M.08.03 Landscape Survey. Sector 3 - Hamilton Harbour

M.08.04 Landscape Survey. Sector 4 - Saltfleet

M.09 Land Use & Planning

- M.09.00 Existing Land Use, 1972 (1" = 1,000 ft.)
- M.09.01 Existing Land Use Pattern, 1973
- M.09.02 Current Official Plans Pattern
- M.09.03 Provincial Development Planning
- M.09.04 Land Use and Planning Reference Map $1\frac{1}{4}" = 1$ mile.

M.11 Recreation

M.11.01 Recreation Inventory

M.11.02 Recreation Potentials

M.12 History and Touring

M.12.01 Points of Interest 1" = 50,000'

M.12.02 Touring and Points of Interest 1:25,000.

M.13 Infrastructure

- M.13.01 Principal Transportation Facilities
- M.13.02 Principal Communication Facilities
- M.13.03 Water Distribution and Drainage
- M.13.04 Sanitary Services (Halton-Wentworth counties)
- M.13.05 Hamilton-Burlington Beach Strip
- M.13.06 Transportation Facilities
- M.13.07 Sanitary Services (Waterfront Study area)
- M.13.08 Water Supply System
- M.13.09 Communications Facilities
- M.13.10 Burlington City. Storm Sewers. Dec. 1965
- M.13.11 Ancaster City. Storm Sewers
- M.13.12 Town of Stoney Creek. Storm Drainage. 1" = 400'
April, 1970
- M.13.13 Town of Oakville. Storm Sewers Master Plan
January, 1972. 1" = 800'
- M.13.14 Burlington. Sanitary Sewers. Feb., 1967.
1" = 200'
- M.13.15 P.U.C. Burlington. Water Mains and Distribution
Jan., 1972. 1" = 400'

- M.13.16 P.U.C. Burlington. Hydro Distribution. Sept. 1970.
1" = 1,000'
- M.13.17 Hydro Distribution Lines. Shows 4kv and 13.8kv
in Burlington prepared by P.U.C. 1" = 1,000'
- M.13.18 Hydro Transmission Lines (Oakville-Burlington
Area) Composite prepared by OHEPC showing existing
and future installations. 2" = 1 mi.
- M.13.19 Hydro Transmission lines (Hamilton and Wentworth
County-Key Plan). Composite prepared by OHEPC
showing exist and future installations. 1" = 2 mi.
- M.13.20 Burlington District-Transmission map. Marked up by
OHEPC, shows exist and future lines. 4" = 1 mi.
- M.13.21 Hamilton and Environs. Key Transmission Map.
Marked up by OHEPC, shows exist and future facilities
1" = 2,400'.
- M.13.22 Key Transmission Map Stoney Creek Area. Marked
up by OHEPC, shows exist and future facilities
2" = 1 mi.
- M.13.23 Key Distribution Map, Stoney Creek R.O.A.
2" = 1 mi.
- M.13.24 Oakville, Hydro Power Operating map. Shows exist
system, by P.U.C. 1970. 1" = 1,000'
- M.13.25 Solid Water Disposal Dumps. 4 xerox copies of
dump sites in Halton and Wentworth Counties.
Sewer Outfalls and water intakes for Lake Ontario
and Hamilton including a description of industrial
outfalls (set of xerox notes).
- M.13.26 Oakville Township. Proposed San. Sewer System
1" = 2,000'. Mar. 1972
- M.13.27 Town of Burlington. Expansion of Sewage Treatment
Facilities. 1" = 1,000'. April, 1958

- M.13.28 Town of Oakville. San. Sewer Master Plan.
1" = 800'. October, 1971.
- M.13.29 City of Hamilton. Storm, Sanitary and Comb.
Sewers. 1" = 1,000'. Oct. 1971.
- M.13.30 Town of Milton. General Servicing Plan; San.,
Storm Sewers, Watermains. 1" = 800'. Oct. 1969.
- M.13.31 Town of Dundas. General Services; San., Storm
Sewers Future Ext. Lift Stations. 1"=400'
July, 1967.
- M.13.32 Town of Stoney Creek. Sanitary Sewers. 1" = 100'
October 1972.
- M.13.33 Town of Dundas. Sewage Area Maps. 1" = 200'
Oct. 1972.
- M.13.34 County of Halton. Road and County Map. 1" = 1 mi.
June 1972.
- M.13.35 County of Wentworth, Roads. 1" = 2 miles.
- M.13.36 City of Hamilton. Future Road Network.
1" = 2,000'. Feb. 1972.
- M.13.37 Trans-Northern Pipeline Co. Pipelines Location
Plan.
- M.13.38 Sun Canadian Pipeline Co. Ltd. Pumping Stns.
and Terminals 1" = 4 mi. Jan. 1969.
- M.13.39 Dundas Transportation Study. Network No. 5. 1966.
- M.13.40 Sun Canadian Pipeline Co. Ltd. Plan and Profile
of Hamilton Harbour Crossing. 1" = 200' (Hor.),
1" = 20' (Vert.), 1962.
- M.13.41 Imperial Oil Ltd. Sarnia Product Pipeline Div.
Waterdown to Hamilton Branch Line, Plan and Profile
Set of 9 drawings. 1" = 400'. 1952.

- M.13.42 Sketches of various pipeline routes in Halton and Wentworth Counties. 1972.
- M.13.43 Highway 403 - Functional Alignment (Xerox page from Deleuw Cather's report) 1972.
- M.13.44 Major Bell Telephone Facilities in Halton and Wentworth Counties Dwg 3067-T-003 marked-up by Bell Telephone Company. 1" = 50,000 1972
- M.13.45 C.N.R. - Hamilton, Set of 2 property drawings showing fill at Stuart St. yard. 1" = 100'
- M.13.46 C.N.R. - Set of 3 property drawings for Hamilton and the Beach strip area. 1" = 200', 1" = 1 mi. 1928.
- M.13.47 Trans-Northern Pipeline Across the Burlington Canal. 1" = 100', 1" = 40', 1" = 10'. 1959.
- M.13.48 Toronto-Niagara, Route Sheet Trans Canada Pipeline Ltd. 1" = 1 mi. April 1967.
- M.13.49 System Map. Interprovincial Pipeline Co. and Lakehead Pipeline Co. Inc. Sept. 1972.
- M.13.50 1972 Looping. Loop-57 and Loop-58. International Pipeline.
- M.13.51 Water Operating Map. Oakville P.U.C. 1" = 400'. June 1972.
- M.13.52 Hydro-Electric Power Commission of Ontario. Eastern Region and Area. April 1971.
- M.13.53 Oakville Water Distribution System. Pressure Zones - Pumping Stns. October 1972.
- M.13.54 The Oakville P.U. Commission. Water Distribution Arterial Map. 1" = 800'. July 1972.

- M.13.55 City of Hamilton. Water Works Dept. 1" = 2000'
March 1971.
- M.13.56 P.U.C. of Burlington. Water Distribution
System 1" = 2000'. May, 1972.
- M.13.57 Town of Stoney Creek. Water Mains Dist. System
1" = 100'. Oct. 1972.
- M.13.58 Burlington P.U.C. Water Dist. System.
1" = 2000'. Jan. 1970
- M.13.59 East System Niagara and Central Regions Diagram
H.T. Lines, 115KV Lines
(a) Niagara Region, Jan '72
(b) West Half, Feb. '72
(c) East Half, Feb. '72.
- M.13.60 Gas Lines - Hamilton-Burlington Beach Strip
Plan received from United Gas Co. shows location
of lines. 1" = 100'. Received March 1973.
- M.13.61 Exist Hydro Dist. Line on Beach strip. Rec'd
from Hamilton Hydro elect. Syst. May 1, 1973.

M.14 Marine and Harbour

- M.14.01 Lake Ontario - Toronto to Niagara River. Soundings
 in Feet.
- M.14.02 Hamilton Harbour. Soundings in Feet
- M.14.03 Schedules T.U.V.W. to the official plan Amendment No.
 278 (Re: Hamilton Harbour)

M.15 Public Administration

M.15.01 Municipal Boundaries 1973

M.15.02 Conservation Authorities Boundaries

- M.16.00 Goals Plan (display map for public meetings)
1 mile = $1\frac{1}{4}$ " approximately.
- M.16.01 Concept Plan (eight display panels, coloured;
to (1 inch = 400 feet).
- M.16.09
- M.16.10 Legend for Concept Plan
- M.16.11 Techniques for Shoreline Modification (display
panel).
- M.16.12 Local Waterfront Access Park (display panel)
- M.16.13 Community Waterfront Park/Promenade (display
panel).

•

U N I T I N D E X

- . This index identifies references to each of the 38 units.
- . Units are identified on the accompanying map.
- . See also Section 1, Part 18 "Unit Files", and 00.00, Final Report Vol. 1, June 1974 for land use proposals by unit(following page 176).

TOWN OF CENTRAL HALTON

TOWN OF OAKVILLE

CITY OF BURLINGTON

LAKE
ONTARIO

TOWN OF FLAMBOROUGH

TOWN OF
DUNDAS

TOWN OF
ANCASTER

CITY OF HAMILTON

TOWN OF STONEY CREEK

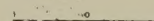
TOWN OF
GRIMSBY

TWP. OF GLANFORD

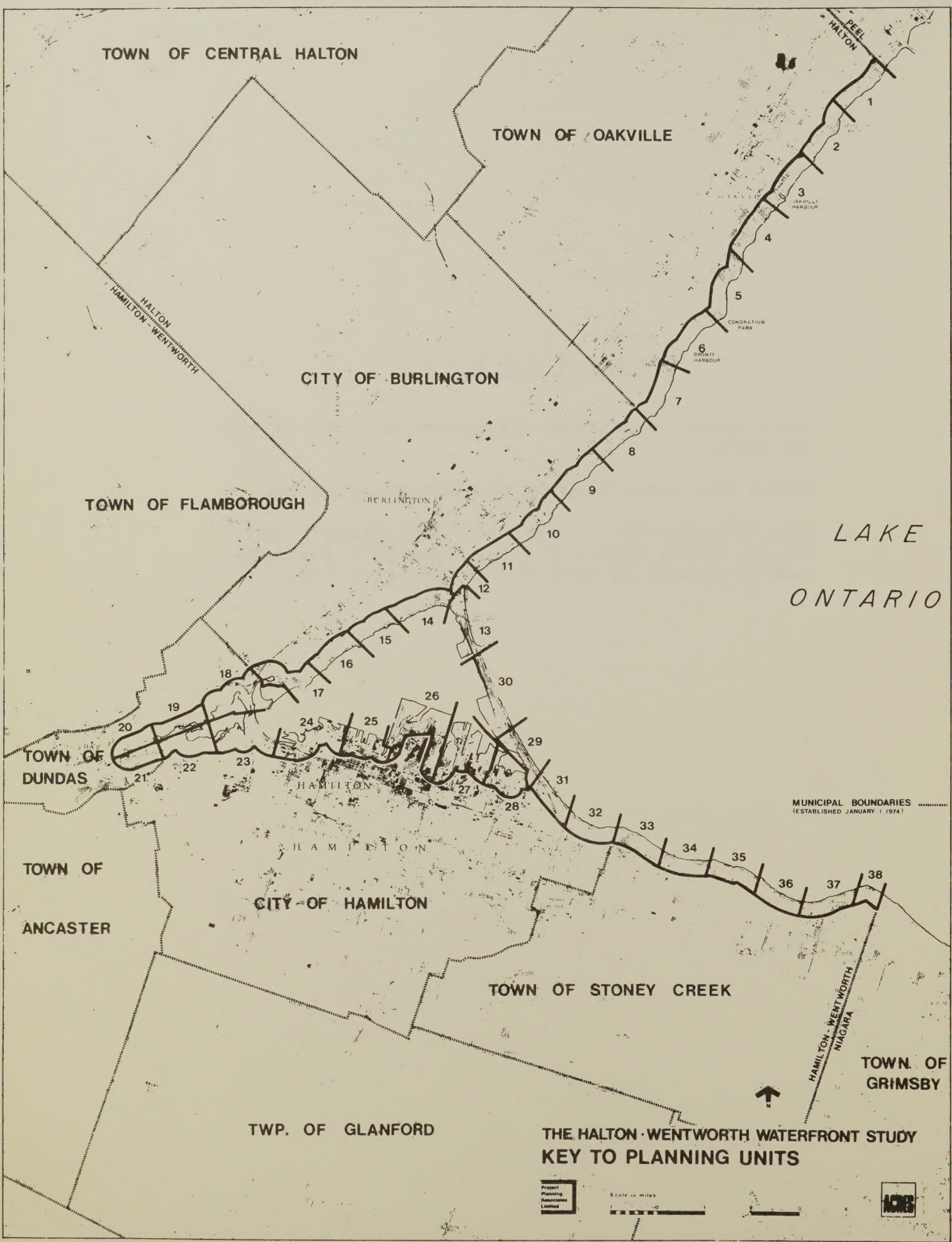
THE HALTON-WENTWORTH WATERFRONT STUDY
KEY TO PLANNING UNITS



Scale in miles



MUNICIPAL BOUNDARIES
(ESTABLISHED JANUARY 1, 1974)



UNIT 1 - OAKVILLE -Joshuas Cr.(Winston Churchill Blvd. to
Ninth Line Road)

Hydrometeorology - 03.00 - p. 21

Land Use and Planning - 09.00 - p. 5

Marine & Harbour - 14.00 - p. 24

Draft Report (Vol. 1) - 00.02 - p. 136, 142

Draft Report (Vol. 2) - 00.03 - p. 50, 53

Draft Report (Vol. 3 - Maps) - 00.04 - p. 3, 40, 77, 114

Alternatives by unit - 00.05 - p. 1 to 4

Alternatives by municipality - 00.06 - p.1, 5 to 18

Final Report (Vol. 1) - 00.00 - p. 16, 20, 24, 40, 42, 43,
46, 72, 75, 101, 111, 120,
125, 126, 128, 172, 174, 175.

UNIT 2 - OAKVILLE - Gairloch Gardens (Ninth Line To
Chartwell Road)

Hydrometeorology - 03.00 - p. 21

Land Use and Planning - 09.00 - p. 6

History - 12.00 - p. 6

Draft Report (Vol. 1) - p. 78, 145

Draft Report (Vol. 2) - 00.03 - p. 51

Draft Report (Vol. 3) - 00.04 - p. 4, 41, 78, 115

Final Report (Vol. 1) - 00.00 - p. 16, 36, 40, 42, 46, 72,
101, 172, 174, 175

UNIT 3 - OAKVILLE - Oakville Harbour (Chartwell Road
to Kerr Road)

Hydrometeorology - 03.00 - p. 2,3,5,8,17,21
Geology - 04.00 - p. 8,10
Biology - 07.00 - p. 4,7
Landscape - 08.00 - p. 3,4
Land Use and Planning - 09.00 - p. 2,6
Recreation - 11.00 - p. 4,5,9,10
History - 12.00 - p.6
Touring - 12.01 - p. 1,2,13,23,28,29,40,45,51,62
Infrastructure - 13.00 - p. 11,12,16,17,20,26,30,33,43,49,53
Marine & Harbour - 14.00 - p. 17,24
Public Administration - 15.00 - p. 1 to 26
Public Participation - 16.00 - p. 79 to 132
Industrial and Commercial Survey - 16.01 - p. 30,60,61
In-field Resident Surveys - 16.02 - p. 1 to 39, 51 to 57
History and Recreation - 16.03 - p. 28,39
Hotline Analysis - 16.04 - p. 5, 10, 11, 14
Public Relations - 16.05 - p. 6,8

Draft Report (Vol. 1)- 00.02 - p.19,32,40,43,51,61,65,67,68,74,
79,86a & b, 88,94,125,126,128,130,
136,142,145,147,148,149,156
Draft Report (Vol. 2)- 00.03 - p.51,53,54; 50 to 62
Draft Report (Vol. 3)- 00.04 - p.5, 42, 79, 116
Alternatives by Unit - 00.05 - p. 9 to 11
Alternatives by Municipality - 00.06 - p. 1,5 to 18
Final Report (Vol. 1) 00.00 - p. 16,17,18,24,43,52,58,71,72,74,
75,80,82,83,84,87,88,90,94,95,
102,111,113,119,123,124,125,126
127,128,129,138,172,174,175.

UNIT 4 - OAKVILLE - Appleby College (Kerr Rd. to Fourth Line)

Hydrometerology - 03.00 - p. 21

Land Use and Planning - 09.00 - p. 8

History - 12.00 - p. 6

Touring - 12.01 - p. 29

Draft Report, Vol. 1 - 00.02 - p. 145

Draft Report, Vol. 2 - 00.03 - p. 53, 54

Draft Report, Vol. 3 - 00.04 - p. 6, 43, 80, 117

Alternatives by Unit - 00.05 - p. 12 to 14

Alternatives by Municipality - 00.06 - p. 1, 5, to 18

Final Report (Vol. 1) - 00.00 - p. 16, 36, 72, 101, 113, 172, 174

UNIT 5 - OAKVILLE - Coronation Park (Fourth Line to
Third Line)

Hydrometeorology - 03.00 - p. 21

Land Use and Planning - 09.00 - p. 9

Recreation - 11.00 - p. 3

Touring - 12.01 - p. 29

Draft Report - Vol. 1 - 00.02 - p. 65, 88, 136, 145

Draft Report - Vol. 2 - 00.03 - p. 51, 53

Draft Report - Vol. 3 - 00.04 - p. 7, 44, 81, 118

Alternatives by Unit - 00.05 - p. 15 to 17

Alternatives by Municipality - 00.06 - p. 1, 5 to 18

Final Report (Vol. 1) - 00.00 - p. 14, 16, 36, 39, 41, 52,
58, 72, 101, 109, 172, 174, 175

UNIT 6 - OAKVILLE - Bronte (Third Line to Bronte Road)

Limnology - 01.00 - p. 16,17

Hydraulic - 02.00 - p. 2

Hydrometerology - 03.00 - p. 17, 22

Geology - 04.00 - p. 7

Biology - 07.00 - p. 5,7, 10

Landscape - 08.00 - p.4

Land Use and Planning - 09.00 - p. 10

Recreation - 11.00 - p. 3,4,9,10

History - 12.00 - p.4

Touring - 12.01 - p. 1,2,13,23,28,29,40,45,51,62

Infrastructure - 13.00 - p. 17, 19

Marine & Harbour - 14.00 - p. 17,24

Draft Report - Vol. 1 - 00.02 - p. 32,59,67,68,77,147,156

Draft Report - Vol. 2 - 00.03 - p. 50,53,54

Draft Report - Vol. 3 - 00.04 - p. 8, 45, 82, 119

Alternatives by Unit - 00.05 - p. 18 to 21

Alternatives by Municipality - 00.06 - p. 1, 5 to 18

Final Report (Vol. 1) - 00.00 - p. 14,16,17,18,20,24,36,39,43,71,
72,75,80,82,83,84,85,86,88,89,
90,91,92,93,102,108,111,120,124,
125,126,127,128,129,131,138,172,
174,175

UNIT 7 - OAKVILLE - Shell Park (Bronte Rd. to Burloak Drive)

Hydrometeorology - 03.00 - p.22

Geology - 04.00 - p. 10, 11

Air Quality - 06.00 - p. 34, 47, 48

Biology - 07.00 - p. 5

Land Use and Planning - 09.00 - p. 11

Recreation - 11.00 - p. 5

Touring - 12.01 - p. 29, 30, 51, 62

Draft Report - Vol. 1 - 00.02 - p. 18,19,65,74,75,88,125,
128,142,145

Draft Report - Vol. 2 - 00.03 - p. 50,53

Draft Report - Vol. 3 - 00.04 - p. 9, 46, 83, 120

Alternatives by Unit - 00.05 - p. 22 to 24

Alternatives by Municipality - 00.06 - p. 1, 5 to 18

Final Report (Vol. 1) - 00.00 - p. 15, 16, 20, 36, 39, 41, 45,
65, 67, 72, 75, 120, 172, 174,
175

UNIT 8 - BURLINGTON - Appleby Creek (Burloak Drive to
Appleby Line)

Hydrometeorology - 03.00 - p. 22

Geology - 04.00 - p. 10

Land Use and Planning - 09.00 - p. 13

Touring - 12.01 - p. 31

History & Recreation - 16.03 - p. 37

Draft Report, Vol. 1 - 00.02 - p. 83,128,136,145

Draft Report, Vol. 3 - 00.04 - p. 10,47,84,121

Alternatives by Unit - 00.05 - p.25 to 29

Alternatives by Municipality - 00.06 - p. 2, 19 to 33

Final Report (Vol. 1) - 00.00 - p. 16,19,36,41,43,52,72,102,
103,108,172,175

UNIT 9 - BURLINGTON - Shore Acres Creek (Appleby Line to Walkers Line)

Hydrometeorology - 03.00 - p. 22

Geology - 04.00 - p. 9,10

Land Use and Planning - 09.00 - p. 14

Touring - 12.01 - p. 31

Marine & Harbour - 14.00 - p.24

Draft Report - Vol. 1 - 00.02 - p. 43, 83, 145

Draft Report - Vol. 3 - 00.04 - p. 11, 48, 85, 122

Alternatives by Unit - 00.05 - p. 30 to 32

Alternatives by Municipality - 00.06 - p. 2, 19 to 33

Final Report (Vol. 1) - 00.00 - p. 16,24,36,41,43,72,102,123,
125,126,128,172,174,175

UNIT 10 - BURLINGTON - Sioux Lookout Park (Walkers Line
to Guelph Line)

Hydrometeorology - 03.00 - p. 22

Geology - 04.00 - p. 9

Water Quality - 05.00 - p. 2,6

Land Use and Planning - 09.00 - p. 15

Touring - 12.01 - p. 30, 31

History & Recreation - 16.03 - p. 37

Draft Report - Vol. 1 - 00.02 - p. 33,43,60,65,83,94,145

Draft Report - Vol. 3 - 00.04 - p. 12,49,86,123

Alternatives by Unit - 00.05 - p. 33 to 36

Alternatives by Municipality - 00.06 - p. 2, 19 to 33

Final Report (Vol. 1) - 00.00 - p. 16,36,38,43,45,72,102,172,
174,175

UNIT 11 - BURLINGTON - Rambo Creek (Guelph Line to
Brant Street)

Hydrometeorology - 03.00 - p.22

Land Use and Planning - 09.00 - p. 17

Touring - 12.01 - p. 31

Draft Report - Vol. 1 - 00.02 - p. 83,90,94,145

Draft Report - Vol. 3 - 00.04 - p. 13,50,87,124

Alterantives by Unit - 00.05 - p. 37 to 39

Alternatives by Municipality - 00.06 - p.2, 19 to 33

Anchorage Site - 09.23

Final Report (Vol. 1) - 00.00 - p. 16,36,38,45,52,102,103,108,
172,174,175

UNIT 12 - BURLINGTON,

(Brant Street to Maple Avenue)

Hydrometeorology - 03.00 - p. 3,5,7,8,22

Air Quality - 06.00 - p.49

Biology - 07.00 - p. 7,12

Land Use and Planning - 09.00 - p. 3, 18

Touring - 12.01 - p. 1,3,13,30,40,43,45,53,63

Infrastructure - 13.00 - p. 11,12,18,21,26,30,34,43,49

Marine & Harbour - 14.00 - p. 24

Public Administration - 15.00 - p. 1 to 26

Public Participation - 16.00 - p. 27 to 78

Industrial & Commerical Survey - 16.01 - p. 28,29,59

In-field Resident Surveys - 16.02 - p. 1 to 39; 46 to 50

History & Recreation - 16.03 - p. 13 to 27; 35,37.

Hotline Analysis - 16.04 - p. 3, 11, 13

Public Relations - 16.05 - p. 6,8

Draft Report (Vol. 1) - 00.02 - p. 36,47,60,66,77,79,83,86a & b,
90,91,122,125,126,128,130,132

Draft Report - Vol. 2 - 00.03 - p. 63 to 77

Draft Report - Vol. 3 - 00.04 - p. 14, 51, 88, 125

Alternatives by Unit - 00.05 - p. 40 to 41

Alternatives by Municipality - 00.06 - p. 2, 19 to 33

Final Report (Vol. 1) - 00.00 - p. 18,24,43,103,108,113,124,125,
126,128,129,131,138,172,175

UNIT 13 - BURLINGTON - Burlington Beach (North Shore
Blvd. E. to Burlington Canal)

Limnology - 01.00 - p. 1,2,3

Hydraulics - 02.00 - p. 7,16

Geology - 04.00 - p. 7

Water Quality - 05.00 - p. 2,6,8

Air Quality - 06.00 - p. 12

Biology - 07.00 - p. 7,12

Land Use and Planning - 09.00 - p. 19

Recreation - 11.00 - p. 8

History - 12.00 - p. 4

Touring - 12.01 - p.1,3,13,20,27,30,33,43,47

Infrastructure - 13.00 - p.8

Infrastructure Analysis (Beach) - 13.01 - p. 1 to 51

Marine & Harbour - 14.00 - p. 5, 15, 25

History & Recreation - 16.03, p. 6, 37

Draft Report Vol. 1 - 00.02 - p. 16,24,32,33,34,75,83,88,90,95
97,120,121,123,135,136,154

Draft Report Vol. 3 - 00.04 - p.15,52,89,126

Alternatives by Unit - 00.05 - p. 42 to 46

Alternatives by Municipality - 00.06 - p.2,19 to 33

Final Report (Vol. 1) - 00.00 - p. 14,15,17,20,26,27,28,29,30,31,
35,41,46,52,53,58,59,61,68,75,
84,94,110,113,115,117,120,121,
125,127,128,129,131,132,144,
160,174,175

UNIT 14 - BURLINGTON - Aldershot (Maple Ave. to Eagle Dr.)

Hydrometeorology - 03.00 - p.23

Water Quality - 05.00 - p. 12

Biology - 07.00 - p. 5

Landscape - 09.00 - p. 21

Recreation - 11.00 - p. 10

Touring - 12.01 - p. 31

Marine and Harbour - 14.00 - p. 5, 15, 25

Draft Report (Vol. 1) - 00.02 - p. 20,66,83, 100 to 119,
145,147,156

Draft Report (Vol. 3) - 00.04 - p. 16,53,90,127

Alternatives by Unit - 00.05 - p. 47,48

Alternatives by Municipality - 00.06 - p. 2,19 to 33

Final Report (Vol. 1) - 00.00 - p. 16,17,61,72,74,75,102,110,
153,172,174,175

UNIT 15 - BURLINGTON - Aldershot (Eagle Dr. to LaSalle
Park Road)

Water Quality - 05.00 - p.2,3,12

Landscape - 09.00 - p.21

Recreation - 11.00 - p. 9,10

History - 12.00 - p. 5

Touring - 12.01 - p. 4,31,39,44

Marine and Harbour - 14.00 - p. 5,7,15,25

History & Recreation - 16.03 - p. 3,5,33

Draft Report (Vol. 1) - 00.02 - p.17,58,66,67,74,83,100 to 119, 15

Draft Report (Vol. 3) - 00.04 - p. 17,54,91,128

Alternatives by Unit - 00.05 - p. 49,50

Alternatives by Municipality - 00.06 - p. 2, 19 to 33

Final Report (Vol. 1) - 00.00 - p. 17,72,110,113,125,128,132,153,
172,174,175

UNIT 16 - BURLINGTON - Aldershot

(LaSalle Pk. Rd. to Unsworth Ave)

Water Quality - 05.00 - p. 12

Land Use & Planning - 09.00 - p. 23

Recreation - 11.00 - p. 10

Marine & Harbour - 14.00 - p. 5,15

Draft Report (Vol. 1) - 00.02 - p. 60,66,74,83,100 to 119, 156

Draft Report (Vol. 3) - 00.04- p. 18, 55, 92, 129

Alternatives by Unit - 00.05 - p. 51, 52

Alternatives by Municipality - 00.06 - p. 2, 19 to 33

Final Report (Vol. 1) - 00.00 - p. 17,102,103,110,153,174

UNIT 17 - BURLINGTON - R.B.G. (Unsworth Ave. to Town Line)

Hydrometeorology - 03.00 - p. 23

Land Use and Planning - 09.00 - p. 24

Touring - 12.01 - p. 22

Marine & Harbour - 14.00 - p. 5

Draft Report (Vol. 1) - 00.02 - p. 66,83, 100 to 119,
142,145,155

Draft Report (Vol. 3) - 00.04 - p. 19, 56, 93, 130

Alternatives by Unit - 00.05 - p. 53,54

Alternatives by Municipality - 00.06 - p. 2, 19 to 33

Final Report (Vol. 1) - 00.00 - p. 16,17,18,58,60,63,71,72,75,80
83,85,86,88,89,90,92,95,110,11
153,172,175

UNIT 18 - HAMILTON - R.B.G. to Cootes Paradise

(Rock Garden & Arboretum to
Burlington Heights Canal).

Hydrometeorology - 03.00 - p. 3,4,5,13,15,17

Water Quality - 05.00 - p. 13,14

Air Quality - 06.00 - p. 8,12

Biology - 07.00 - p. 4,6,8

Landscape Research - 08.00 - p. 4,5

Land Use and Planning - 09.00 - p. 3,26

Recreation - 11.00 - p. 4,6,7,8,10

History - 12.00 - p. 5

Touring - 12.01 - p. 1,5,13,24,25,26,31,32,38,39,47

Marine & Harbour - 14.00 - p. 5

History & Recreation - 16.03 - p. 9

Draft Report (Vol. 1) - 00.02 - p. 17,20,21,34,58,66,
74,77,83,155,156

Draft Report (Vol. 2) - 00.03 - p. 78 to 85

Draft Report (Vol. 3) - 00.04 - p. 20, 57, 94, 131

Alternatives by Unit - 00.05 - p. 55, 56

Alternatives by Municipality - 00.06 - p. 3, 41 to 43

Final Report - (Vol. 1) - 00.00 - p. 13,17,18,20,51,56,57,58,68,
69,70-76,80,85,86,87,88,89,
92,93,94,95,111,112,117,120,
129,132,138,175

UNIT 19 - DUNDAS - R.B.G. and Cootes Paradise
(Dundas Town Line to HEPC)

Hydrometeorology - 03.00 - p. 3,4,5,13,15

Water Quality - 05.00 - p. 13,14

Air Quality - 06.00 - p. 8, 12

Biology - 07.00 - p. 4,6,8,11

Landscape - 08.00 - p. 4,5

Land Use and Planning - 09.00 - p. 3,26

Recreation - 11.00 - p. 4,6,7,10

History - 12.00 - p. 5

Touring - 12.01 - p. 1,5,13,24,31

Infrastructure - 13.00 - p. 9

History & Recreation - 16.03 - p. 9

Draft Report Vol. 1 - 00.02 - p. 17,21,58,66,77,83,155,156

Draft Report Vol. 2 - 00.03 - p. 78 to 85

Draft Report Vol. 3 - 00.04 - p. 21,58,95,132

Alternatives by Unit - 00.05 - p. 55,56

Alternatives by Municipality - 00.06 - p. 3, 41 to 43

Final Report (Vol. 1) - 00.00 - p. 32,76,93,103,160

UNIT 20 - DUNDAS - (Town of Dundas, North of
Desjardins Canal)

Hydrometeorology - 03.00 - p. 23

Water Quality - 05.00 - p. 13, 14

Biology - 07.00 - p. 4,6,8,11

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 3,27

Recreation - 11.00 - p. 4,7,10

History - 12.00 - p. 5

Touring - 12.01 - p. 2,6,13,23,24,31,40,43,47,55,63

Infrastructure - 13.00, p. 26,32,36,44,51

Hotline Analysis - 16.04 - p. 10, 15

Draft Report Vol. 1 - 00.02 - p. 21,22,63,77,79,83,
86a & b, 92, 122, 127,
131, 135

Draft Report Vol. 2 - 00.03 - p. 78 to 85

Draft Report Vol. 3 - 00.04 - p. 22,59,96,133

Alternatives by Unit - 00.05 - p. 55,56

Alternatives by Municipality - 00.06 - p. 3, 41 to 43

Final Report (Vol. 1) - 00.00 - p. 13,14,19,29,53,56,58,76,86,
93,103,108,120,129,134,138

UNIT 21 - DUNDAS (Town of Dundas, South of Desjardins
Canal to HEPC)

Hydrometeorology - 03.00 - p. 17, 23

Water Quality - 05.00 - p. 13,14

Biology - 07.00 - p. 4,6,8,11

Landscape - 08.00 - p. 5

Land Use and Planning - p. 3,28

Recreation - 11.00 - p. 4,5,7,10

History - 12.00 - p. 5

Touring - 12.01 - p. 22,24,26,31,39,44,47

Draft Report, Vol. 1 - 00.02 - p. 16,21,65,77,79,83,86a & b,
91,92,127,131,142,145

Draft Report, Vol. 2 - 00.03 - p. 78 to 85

Draft Report, Vol. 3 - 00.04 - p. 22,59,96,133

Alternatives by Unit - 00.05 - p. 55,56

Alternatives by Municipality - 00.06 - p.3, 41 to 43

Final Report (Vol. 1) - 00.00 - p. 16,19,71,72,76,86,93,111,120,
129,134,138,172

UNIT 22 - HAMILTON - Cootes Paradise & McMaster Uni.
(HEPC to Churchill Field)

Water Quality - 05.00 - p. 13,14

Biology - 07.00 - p. 4,6,8

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 28

Recreation - 11.00 - p. 4,7,10

History - 12.00 - p. 5

Touring - 12.01 - p. 24,31

Draft Report, Vol. 1 - 00.02 - p. 22,33,58,66,77,83,155

Draft Report, Vol. 2 - 00.03 - p. 78 to 85

Draft Report, Vol. 3 - 00.04 - p. 23, 60, 97, 134

Alternatives by Unit - 00.05 - p. 55,56

Alternatives by Municipality - 00.06 - p. 3,4, 44 to 52

Final Report (Vol. 1) - 00.00 - p. 76, 172

UNIT 23 - HAMILTON - Cootes Paradise & Burlington Heights
(Churchill Fields & Dundurn Castle)

Water Quality - 05.00 - p. 13,14

Biology - 07.00 - p. 4,6,8

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 29

Recreation - 11.00 - p. 4,7,8, 10

History - 12.00 - p. 5

Touring - 12.01 - p. 5,13,24,25,26,31,32,38,47

Marine & Harbour - 14.00 - p. 1,2,5,6,15

History & Recreation - 16.03 - p. 5

Draft Report, Vol. 1 - 00.02 - p. 21,33,66,76,77,83,120

Draft Report, Vol. 2 - 00.03 - p.78 to 85

Draft Report, Vol. 3 - 00.04 - p. 24,61,98,135

Alternatives by Unit - 00.05 - p. 55,56

Alternatives by Municipality - 00.06 - p. 3,4, 44 to 52

Final Report (Vol. 1) - 00.00 - p. 16,17,18,20,23,51,56,57,58,68,
69,72,76,80,85,86,87,88,89,92,
93,94,95,111,112,120,129,172,17

UNIT 24 - HAMILTON - C.N.R. Yards to Royal Hamilton
Yacht Club

Limnology - 01.00 - p. 1,4,15
Hydraulic - 02.00 - p. 7,8,9
Hydrometeorological - 03.00 - p. 8,13,15,16
Water quality - 05.00 - p. 2,3
Air Quality - 06.00 - p. 4,11,15,17,18,20,47
Biology - 07.00 - p. 5,8,10
Landscape - 08.00 - p. 5
Land Use and Planning - 09.00 - p. 29
Economic, Industrial - 10.00 - p. 3,2,19
Recreation - 11.00 - p. 9
Touring - 12.01 - p. 5, 13, 39, 56, 64
Infrastructure - 13.00 - p. 14, 18, 26, 31, 35, 45, 47, 53
Marine & Harbour - 14.00 - p. 1, 15, 18, 25
Public Administration - 15.00 - pgs. 1 to 26 inclusive
Public Participation - 16.00 - pgs. 1 to 26
Industrial & Commercial - 16.01 - p. 26,27,57,58
In-Field Resident Surveys - 16.02 - p. 1 to 39, 40 to 45
History & Recreation - 16.03 - p. 4,10,32,34
Hotline Analysis - 16.04 - p. 4,11,14
Public Relations - 16.05 p. 6, 8

Draft Report Vol. 1 - 00.02 - p. 24,37,40,43,47,52,57,67,
79,83,86a&b, 92,97, 100 to 119,
120, 125,126,128,129,131,149,156

Draft Report Vol. 2 - 00.03 - p. 86 to 103
Draft Report Vol. 3 - 00.04 - p. 25, 62, 99, 136
Alternatives by Unit - 00.05 - p. 57,58
Alternatives by Municipality - 00.06 - p. 3,4, 44 to 52
Final Report (Vol. 1) - 00.00 - p. 14,17,24,28,30,31,46,56,57,60,
61,62,63,80,83,104,108,110,113,
123,124,125,127,128,133,138,153,
155,174

UNIT 25 - HAMILTON - Industrial Area (from Wellington
Street to Wentworth St. North)

Limnology - 01.00 - p. 1, 4, 15

Hydraulic - 02.00 - p. 7,8,9

Hydrometeorological - 03.00 - p. 9

Air Quality - 06.00 - p. 4,7,13,15,18

Biology - 07.00 - p. 5,8,10

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 30

Economic & Industrial - 10.00 - p. 3,2,19

Recreation - 11.00 - p. 3

Touring and Points of Interest - 12.01 - p. 39

Marine & Harbour - 14.00 - p. 1,3,6,13,15

Draft Report, Vol. 1 - 00.02 - p. 40,75,83,93, 100 to 119

Draft Report, Vol. 3 - 00.04 - p. 26,63,100,137

Alternatives by Unit - 00.05 - p. 59

Alternatives by Municipality - 00.06 - p. 3,4,44 to 52

Final Report (Vol. 1) - 00.00 - p. 14,17,18,19,20,28,29,46,51,53,
54,56,60,62,63,66,80,83,87,88,
94,104,110,153,154

UNIT 26 - HAMILTON - Steel Company of Canada

Limnology - 01.00 - p. 1,4,15

Hydraulic - 02.00 - p. 7,8,9

Hydrometeorological - 03.00 - p. 9

Water Quality - 05.00 - p. 5

Air Quality - 06.00 - p. 4,15,18

Biology - 07.00 - p. 5,8,10

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 30

Economic, Industrial - 10.00 - p.3,4,2,19

Recreation - 11.00 - p. 3

Touring and Points of Interest - 12.01 - p. 39

Marine & Harbour Research - 14.00 - p. 1,3,6,9,12,15

Draft Report (Vol. 1) - 00.02 - p. 40,66,75,83,93,100 to 119,
125,132

Draft Report (Vol. 3) - 00.04 - p. 27,64, 101,138

Alternatives by Unit - 00.05 - p. 59

Alternatives by Municipality - 00.06 - p. 3,4, 44 to 52

Final Report (Vol. 1) - 00.00 - p. 14,17,18,19,28,29,46,51,53,54,
55,56,60,62,63,65,66,80,83,
87,88,94,110,153

UNIT 27 - HAMILTON - Dofasco to Firestone

Limnology - 01.00 - p. 1,4,7,15

Hydraulic - 02.00 - p.7,8,9

Hydrometeorological - 03.00 - p. 9

Air Quality - 06.00 - p. 4,15,18

Biology - 07.00 - p. 5,8,10

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 30

Economic Industrial - 10.00 - p. 3,2,19

Recreation Research - 11.00 - p. 3

Touring & Points of Interest - 12.01 - p. 39

Marine & Harbour - 14.00 - p. 1,3,9,12,15

Draft Report (Vol. 1) - 00.02 - p. 40,66,83,93,100 to 119
125, 132

Draft Report (Vol. 3) - 00.04 - p. 28,65,102,139

Alternatives by Unit - 00.05 - p. 59

Alternatives by Municipality - 00.06 - p. 3,4, 44 to 52

Final Report (Vol. 1) - 00.00 - p. 14,17,18,19,28,29,46,51,53,
54,55,56,60,62,63,65,66,80,
83,87,88,94,110,153

UNIT 28 - HAMILTON - Steel Company of Canada
(Windermere Basin)

Limnology - 01.00 - p. 1,4,15

Hydraulic - 02.00 - p. 7,8,9

Hydrometeorological - 03.00 - p. 9

Water Quality - 05.00 - p. 2

Air Quality - 06.00 - p. 4,15,18

Biology - 07.00 - p. 5,8,10

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 30

Economic, Industrial - 10.00 - p. 2,3,19

Recreation Research - 11.00 - p. 3

Touring & Points of Interest - 12.01 - p. 39

Marine & Harbour - 14.00 - p. 1,4,7

Draft Report (Vol. 1) - 00.02 - p. 40, 100 to 119, 135,137

Draft Report (Vol. 3) - 00.04 - p. 29,66,103,140

Alternatives by Unit - 00.05 - p. 59

Alternatives by Municipality - 00.06 - p.3,4, 44 to 52

Final Report (Vol. 1) - 00.00 - p. 13,14,17,18,19,28,30,46,51,
53,54,55,56,59,60,62,63,64,
65,66,80,83,87,88,94,110,153

UNIT 29 - HAMILTON - Burlington Beach
(From Dunraven Ave. to Burlington
Street interchange)

Hydraulic - 02.00 - p. 7,8,9,16

Geology - 04.00 - p. 7

Water quality - 05.00 - p. 8,10

Land Use and Planning - 09.00 - p. 3,31

Touring & Points of Interest - 12.01 - p. 27,33

Infrastructure Research - 13.00 - p. 8, 13,21

Infrastructure Analysis - 13.01 - pgs. 1 to 51

Marine & Harbour - 14.00 - p. 7, 15

Draft Report (Vol. 1) - 00.02 - p. 16,83,88,90,95,121,123,154

Draft Report (Vol. 3) - 00.04 - p. 30,67,104,141

Alternatives by Unit - 00.05 - p. 60 to 62

Alternatives by Municipality - 00.06 - p. 3,4, 44 to 52

Final Report (Vol. 1) - 00.00 - p. 14,15,17,20,26,30,31,35,41,
46,51,52,53,54,56,60,61,62,63,
66,68,84,87,94,110,113,115,117,
120,121,132,144,153,160,172,175

UNIT 30 - HAMILTON - Burlington Beach
(Burlington Canal to Dunraven Ave)

Limnology - 01.00 - p.1,2,3

Hydraulic - 02.00 - p. 7,16

Geology - 04.00 - p. 7

Water Quality - 05.00 - p. 2,6,8,10

Air Quality - 06.00 - p. 10,13,21

Land Use and Planning - 09.00 - p. 3,32

Touring & Points of Interest - 12.01 - p. 12,27,33,43,44

Infrastructure Research - 13.00 - p. 8,21

Infrastructure Analysis - 13.01 - pgs. 1 to 51

Marine and Harbour - 14.00 - p. 4,7,15

History & Recreation - 16.03 - p. 4,6

Draft Report (Vol. 1) - 00.02 - p. 16,24,32,33,34,75,83,
88,90,95,120,121,123,154

Draft Report (Vol. 3) - 00.04 - p. 31,68,105,142

Alternatives by Unit - 00.05 - p. 60 to 62

Alternatives by Municipality - 00.06 - p. 3,4, 44 to 52

Final Report (Vol. 1) - 00.00 - p. 15,20,26,27,28,30,31,35,41,
46,52,60,61,62,63,66,68,84,94,
110,111,113,115,117,120,121,
129,131,132,138,144,153,160,175

UNIT 31 - HAMILTON - (Confederation Park to Redhill Marsh)

Hydrometeorological - 03.00 - p. 23

Water Quality- 05.00 - p. 2,3,4,5,6,8

Biology - 07.00 - p. 4,5,6,8,12

Landscape - 08.00 - p. 5

Land Use & Planning - 09.00 - p. 32

Recreation Research - 10.00 - p. 5,8,9

Touring & Points of Interest - 12.01 - p. 22,33

Infrastructure Research - 13.00 - p. 8, 10,21

Marine & Harbour - 14.00 - p. 25

History & Recreation - 16.03 - p. 5, 10, 33

Draft Report (Vol. 1) - 00.02 - p. 18,19,20,23,37,44,58,65,
66,67,83,88,91,93,95,145,147,155

Draft Report (Vol.3) - 00.04 - p. 32,69,106,143

Alternatives by Unit - 00.05 - p. 63,64

Alternatives by Municipality - 00.06 - p. 3,4, 44 to 52

Proposed Redhill Expressway - 13.10

Final Report - (Vol. 1) - 00.00 - p. 14,16,17,18,20,31,32,53,58,
59,66,71,72,74,76,77,80,85,
86,87,88,89,90,92,93,111,112,
146,160,172,175

UNIT 32 - HAMILTON - (Confederation Park to Grays Road)

Limnology - 01.00 - p. 16

Hydraulic - 02.00 - p. 7,12

Hydrometeorological - 03.00 - p. 23

Water Quality - 05.00 - p. 2,9,10

Biology - 07.00 - p. 5,6

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 33

Recreation - 11.00 - p. 8,9

Touring & Points of Interest - 12.01 - p. 33

Infrastructure Research - 13.00 - p. 11,26,30,36,46,51

Marine & Harbour - 14.00 - p. 25

Public Administration - 15.00 - pgs. 1 to 26

Draft Report (Vol. 1) - 00.02 - p. 33,47,65,83,88,127,131,145,147

Draft Report (Vol. 3) - 00.04 - p. 33, 70, 107, 144

Alternatives by Unit - 00.05 - p. 63,64

Alternatives by Municipality - 00.06 - p. 3,4, 44 to 52

Final Report (Vol. 1) - 00.00 - p. 16,17,20,24,32,36,44,45,52,53,
59,72,74,77,80,87,88,89,105,
111,112,125,126,128,160,172,175

Unit 33 - STONE CREEK - (From Grays Road to Millen Road)

Air Quality - 06.00 - p. 49

Biology - 07.00 - p. 6

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 4,34

Touring and Pts. of Interest - 12.01 - p. 34,60

Infrastructure Research - 13.00 - p. 9, 31,36,42,46,50

Public Administration - 15.00 - pgs. 1 to 26

Draft Report, Vol. 1 - 00.02 - p. 21,63,78,79,83,86a & b,
88, 127,129,131,149,150

Draft Report Vol. 2 - 00.03 - pgs. 104 to 116

Draft Report, Vol. 3 - 00.04 - p. 34,71,108,145

Alternatives by Unit - 00.05 - p. 65 to 67

Alternatives by Municipality - 00.06 - p. 2,3,34 to 40

Final Report (Vol. 1) - 00.00 - p. 78,104,108,174

UNIT 34 - STONEY CREEK - Cherry Beach

Hydraulic - 02.00 - p. 7,12,14

Air Quality - 06.00 - p. 49

Biology - 07.00 - p. 6

Landscape - 08.00 - p. 5

Land Use & Planning - 09.00 - p. 4,35

Touring & Pts. of Interest - 12.01 - p. 34

Draft Report (Vol. 1) - 00.02 - p. 44,79,83

Draft Report (Vol. 3) - 00.04 - p. 35,72,109,146

Alternatives by Unit - 00.05 - p. 68 to 70

Alternatives by Municipality - 00.06 - p. 2,3, 34 to 40

Final Report (Vol. 1) - 00.00 - p. 11,36,38,41,42,44,45,78,104,
120,174,175

UNIT 35 - STONEY CREEK - (Fruitland Road to Glover Road)

Air Quality - 06.00 - p. 49

Biology - 07.00 - p. 6

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 4,35

Touring and Pts. of Interest - 12.01 - p. 34

Infrastructure Research - 13.00 - p. 9

Marine & Harbour - 14.00 - p. 25

Draft Report (Vol. 1) - 00.02 - p. 79,83,92

Draft Report (Vol. 3) - 00.04 - p. 36, 73, 110, 147

Alternatives by Unit - 00.05 - p. 71 to 73

Alternatives by Municipality - 00.06 - p. 2,3, 34 to 40

Final Report (Vol. 1)- 00.00 - p. 36,37,44,59,78,104,105,108,
125,128,174,175

UNIT 36 - STONEY CREEK - (Glover Road to Lewis Road)

Air Quality - 06.00 - p. 49

Biology - 07.00 - p. 6

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 4, 36

Touring & Pts. of Interest - 12.01 - p. 34

Draft Report (Vol. 1) - 00.02 - p. 79,83

Draft Report (Vol. 3) - 00.04 - p. 37,74,111,148

Alternatives by Unit - 00.05 - p. 74 to 76

Alternatives by Municipality - 00.06 - p. 2,3, 34 to 40

Final Report - (Vol. 1) - 00.00 - p. 36,37,41,42,44,53,104,123,174

UNIT 37 - STONEY CREEK - (Lewis Road to Fifty Road)

Air Quality - 06.00 - p. 49

Biology - 07.00 - p. 6

Landscape - 08.00 - p. 5

Land Use and Planning - 09.00 - p. 4,37

Touring & Pts. of Interest - 12.01 - p. 34

Draft Report (Vol. 1) - 00.02 - p. 79,83

Draft Report (Vol. 3) - 00.04 - p. 38,75,112,149

Alternatives by Unit - 00.05 - p. 77 to 79

Alternatives by Municipality - 00.06 - p. 2,3, 34 to 40

Final Report (Vol. 1) - 00.00 - p. 44,104,105,123,174

UNIT 38 - STONEY CREEK - (Fifty Road to Boundary of Saltfleet)

Limnology - 01.00 - p. 12,13,16

Hydraulic - 02.00 - p. 2,14

Air Quality - 06.00 - p. 49

Biology - 07.00 - p. 6,7

Landscape - 08.00 - p. 5,6

Land Use and Planning - 09.00 - p. 4, 38

Recreation - 11.00 - p. 4

Touring & Pts. of Interest - 12.01 - 33,34,35

Marine & Harbour - 14.00 - p. 25

Draft Report (Vol. 1) - 00.02 - p. 21,32,37,43,47,65,79,83,
85,89,137

Draft Report (Vol. 3) - 00.04 - p. 39,76,113,150

Alternatives by Unit - 00.05 - p. 80 to 82

Alternatives by Municipality - 00.06 - p.2,3, 34 to 40

Proposed Sewerage Treatment Plant - 13.09

Final Report (Vol. 1) - 00.00 - p. 14,16,17,20,24,36,44,59,72,80,
88,89,91,95,105,117,120,121,
124,125,126,128,172,175

SUBJECT INDEX

This index contains references to the following subjects. (The list of subjects corresponds to subjects covered in the Final Report Volume 1, June 1974).*

1. Shore Protection
2. Water Quality
3. Air Quality
4. Stream Valley Protection
5. Fish and Wildlife
6. Estates, Housing and Subdivision
7. Parks and Waterfront Access
8. Recreational Harbours
9. Touring and Points of Interest
10. The Beach Area
11. Hamilton Harbour
12. Transportation Facilities
13. Implementation

* Brief summaries of all aspects of these subjects are contained in 00.00 Chapter 2 and in 00.01.

SHORE PROTECTION

- Data: -Water Characteristics - 00.02 - p. 24-36
- 00.00 - p. 36, 41, 44-46
- Erosion - 00.02 - p. 43-46
- 02.04
- Current Protection
Methods - 00.00 - p. 37-40
- 02.04
- Goals and Objectives - 00.03 - p. 3
- Policy - 00.00 - p. 42-44
- 00.03 - p. 20-25
- Alternatives: -General - 00.03 - p. 44, 48
- See 00.04
- Oakville - 00.03 - p. 59
- Burlington - 00.03 - p. 72
- Cootes
Paradise - 00.03 - p. 81
- Saltfleet - 00.03 - p. 111
- Cost - 00.00 - p. 48, 169
- 00.03 - p. 125
- Recommendations - 00.00 - p. 46
- 00.05 - p. 3, 7, 10, 12, 13, 16, 19,
23, 24, 26, 29, 31, 32, 34,
35, 38, 39, 49, 52, 67, 69,
70, 72, 74, 75, 78, 79, 81,
82.
- 00.06 - p. 8, 10, 11, 22, 37, 38, 42.
- Implementation - 00.00 - p. 48, 166

WATER QUALITY

(See Also Data Bank Index Section 05.)

Data: - 00.00 - p. 51-57
- 05.00
- Water Characteristics - 00.02 - p. 24-36
- Water Supply and Distribution - 00.02 - p. 125-127
- Sanitary Waste Disposal - 00.02 - p. 128-137
- Solid Waste Disposal - 00.02 - p. 138-141
- Storm Drainage - 00.02 - p. 142-147
- Dissolved Oxygen Simulation Model for Hamilton Harbour - 05.13

Goals and Objectives - 00.03 - p. 4
- 00.02 - p. 6
- 00.00 - p. 57

Alternatives: - Pollution Control - 00.03 - p. 47
- See 00.04
- Oakville - 00.03 - p. 62
- Burlington - 00.03 - p. 76, 77
- Cootes Paradise - 00.03 - p. 81, 82
- Hamilton - 00.03 - p. 91, 92
- Saltfleet - 00.03 - p. 113, 114

Water Quality Criteria - 00.00 - p. 57
- 05.02

Pollution Control - 00.03 - p. 36

Recommendations - 00.05 - p. 56
- 00.00 - p. 58-61

Implementation - 00.00 - p. 61-64, 166

AIR QUALITY

(See also Books and Files Index Section 06.)

Data: - 00.00 - p. 65-68

- 06.00

- Air Pollution - 00.03 - p. 38

- Climate - 00.02 - p. 37-39

- Air Quality - 00.02 - p. 40-42

Goals and Objectives - 00.00 - p. 68

- 00.03 - p. 4

- 00.02 - p. 6

Policy - 00.03 - p. 38

Alternatives - 00.03 - p. 62

- 00.03 - p. 93, 94

- 00.03 - p. 114

Recommendations - 00.00 - p. 69

Implementation - 00.00 - p. 69, 166

STREAM VALLEY PROTECTION

Data: - 00.00 - p. 71

- Landform - 00.02 - p. 14-16
- Vegetation - 00.02 - p. 17-18
- Siltation - 00.03 - p. 38
- Public Participation - 00.02 - p. 85

Goals and Objectives - 00.00 - p. 72

Policy - 00.03 - p. 34

- 00.00 - p. 73

Alternatives - General - 00.03 - p. 48

- Oakville - 00.03 - p. 60
- Burlington - 00.03 - p. 73
- Cootes
Paradise - 00.03 - p. 82
- Hamilton - 00.03 - p. 100
- Saltfleet - 00.03 - p. 114

Costs - 00.00 - p. 73-78

- 00.00 - p. 169

Recommendations: - 00.05 - p. 15, 26, 27, 33, 34, 37,
47, 63

- 00.06 - p. 15, 31, 32, 43, 50

Implementation: - 00.00 - p. 78, 166

FISH AND WILDLIFE

Data: - 00.00 - p. 80
- 00.02 - p. 19-23
- 00.04 (Natural Features)
- Vegetation - 00.02 - p. 17-18
- Roads - 00.02 - p. 92, 93

Goals and Objectives - 00.02 - p. 6
- 00.00 - p. 79, 88

Policy - 00.00 - p. 88-95

Recommendations - 00.05 - p. 33, 34, 37, 54, 55
- 00.06 - p. 15, 16, 27, 41
- 00.00 - p. 88-95

Implementation - 00.00 - p. 95, 166, 170

ESTATES, HOUSING AND SUBDIVISIONS

(See also Books and Files Index Section 09. and 10.)

Data: - 00.00 - p. 97

- Population - 00.02 - p. 47-51
- Employment - 00.02 - p. 52-56
- Public Participation - 00.02 - p. 81, 82, 85, 86
- Land Use Pattern - 00.02 - p. 87-89
- Existing Planning Programmes - 00.02 - p. 148-151
- Future Development - 00.02 - p. 152-156
- Ownership - 09.28, M.13.45, M.13.46

Policy: - 00.00 - p. 97-101

- 00.03 - p. 26-30

Alternatives: - General - 00.03 - p. 44, 46

- 00.04
- 00.00 - p. 106-107
- Oakville - 00.03 - p. 54-57
- Burlington - 00.03 - p. 69-72
- Cootes
Paradise - 00.03 - p. 83
- Hamilton - 00.03 - p. 103
- Saltfleet - 00.03 - p. 110

Land Cost - 00.03 - p. 131

Recommendations: - 00.05 - p. 1, 2, 3, 5, 6, 7, 12, 16,
18, 19, 22, 25, 26, 30, 33,
47, 49, 51, 53, 56, 65, 66,
68, 69, 71, 72, 75, 76.

- 00.06 - p. 5, 7, 8, 16, 17, 19, 20, 28,
29, 34, 35.

- 00.00 - p. 101-104, 107, 108

Implementation - 00.00 - p. 105, 166, 170.

PARKS AND WATERFRONT ACCESS

Data: - 00.00 - p. 109-113

- Climate - 00.02 - p. 37-39

- Waterfront Recreation - 00.02 - p. 57-75

- Public Participation - 00.02 - p. 82, 86

- Working Paper No. 11 - 11.00

Goals and Objectives - 00.00 - p. 113

- 00.01

- 00.03 - p. 1, 2, 3, 5

Policy: - 00.00 - p. 114 - 116

- 00.01

- 00.03 - p. 7-19

Alternatives: - General - 00.03 - p. 42

- See 00.04

- Oakville - 00.03 - p. 50-53

- Burlington - 00.03 - p. 63 - 69

- Cootes

Paradise - 00.03 - p. 78

- Hamilton - 00.03 - p. 86-90

- Saltfleet - 00.03 - p. 106-110

Costs - 00.00 - p. 122, 170

Priorities - 00.00 - p. 123, 170

Recommendations: - 00.05 - p. 1, 2, 4, 6, 8-12, 14, 15, 17,
18, 20-25, 27, 28, 30, 31, 35,
37, 40, 46, 49, 53, 57, 79.

- 00.06 - p. 6, 7, 9, 10, 11, 12, 14, 17,
18, 20, 21, 24, 25, 26, 28, 32,
33, 38, 39, 40, 41, 42, 45, 52.

- 00.00 - p. 116, 174, 175

Implementation - 00.00 - p. 116-121, 166, 170

RECREATIONAL HARBOURS

(See also Books and Files Index Section 14)

Data: - 00.00 - p. 124

- Water Characteristics - 00.02 - p. 24-36

- Waterfront Recreation - 00.02 - p. 67-74

Goals and Objectives - 00.00 - p. 124 - 126

- 00.03 - p. 6

Policy - 00.00 - p. 124 - 126

- 00.03 - p. 30-33

Alternatives: - General - 00.03 - p. 47

- See 00.04

- Oakville - 00.03 - p. 61

- Burlington - 00.03 - p. 75

- Hamilton - 00.03 - p. 101

- Saltfleet - 00.03 - p. 115

Costs - 00.00 - p. 126, 128, 170

- 00.03 - p. 129

Recommendations - 00.00 - p. 124-126, 128

- 00.05 - p. 9, 10, 11, 18, 20, 27, 40,
41, 45, 58, 63, 64, 65, 68,
73, 74, 78, 81

- 00.06 - p. 12, 13, 14, 22, 23, 24, 36,
38, 45, 51, 52

Implementation - 00.00 - p. 126, 127, 128, 166, 170

TOURING AND POINTS OF INTEREST

(See also Books and Files Index, Section 12)

Data: - 00.00 - p. 129-137

- Landform - 00.02 - p. 14-16
- History - 00.02 - p. 76-78
- Vegetation - 00.02 - p. 17, 18
- Roads - 00.02 - p. 90-96

Alternatives: - General - 00.03 - p. 43

- Oakville - 00.03 - p. 58

- Burlington - 00.03 - p. 74

- Cootes

Paradise - 00.03 - p. 80-84

- Hamilton - 00.03 - p. 102

- Saltfleet - 00.03 - p. 116

Costs - 00.00 - p. 143, 171

Recommendations - 00.00 - p. 137-141

- 00.05 - p. 3, 4, 8, 9, 10, 11, 13, 16,
17, 20, 23, 28, 30, 34, 38,
41, 47, 50, 54, 55

- 00.06 - p. 8, 9, 11, 12, 29, 42

Implementation - 00.00 - p. 142, 166, 171

THE BEACH AREA

Data: - 00.00 - p. 144-145
- Roads - 00.02 - p. 90
- Railways - 00.02 - p. 97

Goals and Objectives - 00.00 - p. 145
- 00.01
- 00.03 - p. 5

Alternatives - 00.03 - p. 40
- See 00.04

Costs - 00.00 - p. 150, 171

Recommendations - 00.00 - p. 145-150
- 00.05 - p. 42, 43, 44, 60, 61, 62
- 00.06 - p. 30, 31, 47, 48, 49

Implementation - 00.00 - p. 150-152, 166, 171

HAMILTON HARBOUR

(See Also Books and Files Index Section 14)

Data: - Public Participation - 00.02 - p. 83
- Harbour Development - 00.02 - p. 100-114
- Dissolved Oxygen Simulation Model - 05.13

Goals and Objectives - 00.03 - p. 4

Policies - 00.02 - p. 115 - 119

Alternatives: - General - See 00.04
- Port Expansion - 00.03 - p. 94
- Transportation - 00.03 - p. 95-99
- Industrial - 00.03 - p. 95

Recommendations:- 00.00 - p. 153, 158
- 00.05 - p. 59
- 00.06 - p. 46, 47

Implementation:- 00.00 - p. 158, 159, 166, 171

TRANSPORTATION FACILITIES

Data: See Books and Files Index, Section 13

Recommendations: 00.00 - p. 160-162

IMPLEMENTATION

Data: - See Books and Files Index, Section 15

Policy: - 00.00 - p. 163

Costs and Priorities Summary - 00.00 - p. 167-172

Units Costs - 00.00 - p. 173

Recommendations - 00.00 - p. 164-166

ADDITIONAL BIBLIOGRAPHY

The following books, reports, pamphlets and other publications have been consulted during research for the Waterfront Study, but copies are not available in the Data Bank. The titles are arranged according to the eighteen research topics used for the Books and Files Index.

LIMNOLOGY

"Aerial Surveys of Great Lakes Water Temperature, April, 1966 to March, 1968" by T. L. Richards, J. G. Irbe and D. G. Massey, Climatological Studies No. 14, Department of Transport, Meteorological Branch, Toronto, 1969.

"Effects of Thermal Inputs to Lake Ontario 1968-2000," H. G. Acres Ltd., Niagara Falls, Ontario, 1970.

"A Sanitary Survey of the Western End of Lake Ontario" by D. H. Matheson, Corporation of the City of Hamilton, Hamilton, Ontario

"Surface Temperatures of the Great Lakes" By F. G. Millar, Normal Fisheries Resources Board, Canada, 9:329-376, 1952.

"Studies on Currents in Lake Ontario", by E. B. Bennet, Canada Centre for Inland Waters, Department of the Environment, 1972.

HYDRAULICS

"Flood and Erosion Control - Town of Stoney Creek",
1970, by FENCO

"Littoral Drift Studies at Scarborough, Ontario",
D. K. Murphy, Unpublished MASc thesis, 1963,
Geology Department, Univeristy of Toronto.

"Manual of Great Lakes Ice Forecasting," C. Robert
Snyder, NOAA Technical Memorandum NWS CR-48,
U.S. Department of Commerce, Central Region, Kansas
City, Missouri, December, 1971.

"Oakville Flood Control Report, 1963," J. M. Towlinson &
Associates.

"Report on Flood Control Works in the Town of Burling-
ton" James F. MacLaren Ltd.

"Shore Protection Planning and Design," Technicial
Report No. 4, Third Edition, 1966, U.S. Army
Coastal Engineering Research Centre.

"Supplementary Report on Flood Control Works in the
Town of Burlington for the Halton Region Conservation
Authority," October, 1965, James F. MacLaren Limited.

"Synthesized Winds and Wave Heights for The Great
Lakes," T. L. Richards and D. W. Philips,
Climatological Study, No. 17, Department of Transport,
Meteorological Branch, Toronto, 1970.

"Wave Climate Study," Department of the Environment,
Canada, Ottawa.

HYDROMETEOROLOGY

"The Climate of the Great Lakes Basin" D. W. Phillips and J. A. W. McCulloch.

"The Climate of Southern Ontario" Brown, McKay and Chopman.

"Climatic Normals, Canada - Department of Transport, Meteorological Branch.

"Form of Urban Heat Island in Hamilton, T. R. Ore and F. G. Hannell.

"Meteorological Summaries", Atmospheric Environment Services, Department of the Environment, Canada.

"Water Levels 1971, Department of the Environment, Canada Marine Sciences Branch, Ottawa.

"Wind Duration Frequencies", Atmospheric Environment Services.

GEOLOGY

"Excursions in Southern Ontario", issued by The Geological Survey Ottawa, Government Printing Bureau, 1913.

"Geology of the Great lakes", J. L. Hough, University of Illinois Press, Urbana 1958.

"Geology of Pelee and Adjacent Islands," E. M. Kindle, Ontario Department of Mines, 1937.

"Lake Iroquois, Geology of the North Shore of Lake Ontario", A. P. Coleman.

"Natural and Artificial Sediment Tracer Experiments in Lake Ontario", J. P. Coakley, Canada Centre for Inland Waters, Burlington, Canada, 1970.

"Nearshore Sediment Survey of Western Lake Ontario Methods and preliminary Results", N. A. Rukavina, Canada Centre for Inland Waters, Burlington, 1969.

"Paleozoic Geology of the Toronto-Hamilton Area, Ontario", J. F. Caley, Canada Department of Mines and Resources, Geological Survey, Memoir 224, 1940.

"The Physiography of Southern Ontario", L. J. Chapman and D. F. Putman, published for the Ontario Research Foundation by the University of Toronto Press, 1951.

"Pleistocene Geology of the Hamilton Map- Area," P. F. Karrow, Ontario Department of Mines, May, 1959.

WATER QUALITY

"The Effects of Dredging on Water Quality in the Northwest Environmental Protection Agency, Region X, July 1971," G. O'Neal and J. Sceva.

"Evaluation of Procedures for Removing and Decontaminating Bottom Sediments in the Lower Great lakes", Acres Consulting Services Limited, Niagara Falls, Ontario, August, 1972.

"Guidelines and Criteria for Water Quality Management in Ontario", Ontario Water Resources Commission, June, 1970.

"Macroinvertebrate Communities of the Sediment of Hamilton Bay and Adjacent Lake Ontario", Limnology and Oceanography, Vol. 13, No. 1, January, 1968, M. G. Johnson, and D. H. Matheson.

"Report and Technical Discussion on the Expansion of the Burlington Skyway Pollution Control Centre, including Preliminary Investigations into Phosphorus Removal Methods for the Corporation of the Town of Burlington", June 1971, James F. MacLaren Limited.

AIR QUALITY

"Hamilton Region Emissions Survey of CO, February 21, 1971," Ontario Ministry of the Environment, Air Management Branch, 1972.

"Hamilton Region Emissions Survey of Particulates SO₂ and NO_x, 1970", Ontario Ministry of the Environment, Air Management Branch, 1972.

"Mean Annual Sulphation Rates in Oakville, 1967-1971", Ontario Ministry of the Environment, Air Management Branch, 1972.

"A Nationwide Inventory of Air Pollutant Emissions", Acres Consulting Services of Canada, Department of the Environment, Air Pollution Control Directorate, 1972.

"Ontario Air Quality Monitoring Report, 1970: Vol. 1 and 2", Ontario Ministry of the Environment, Air Management Branch.

"Pollution Trends in Hamilton", Ontario Ministry of the Environment, Air Management Branch, 1972.

"The Utilization of an Urban Air Pollution Model in Air Management", L. Shenfield, A. E. Boyer, Ontario Ministry of the Environment, Air Management Branch, 1972.

LANDSCAPE/CONSERVATION

"Grindstone Creek Report, 1965," J. M. Towlinson and Associates.

"Hamilton Region Conservation Report, 1968",
Department of the Environment, Conservation Authorities Branch.

"Landscape Assessment: Qualitative", R. L. Hebblethwaite.

Royal Botanical Gardens Publications

Horticultural Leaflets

#1 Children's Garden

#7 Summer Annuals and Rose Garden

"Sixteen Mile Creek Conservation Report, 1958",
Department of Planning and Development.

"Sixteen Mile Creek Erosion Control Report, 1971",
Phillips Planning and Engineering Ltd., Burlington
Report to the Halton Region Conservation Authority.

"Twelve Mile Creek Conservation Report, 1960,
Conservation Branch.

"Spencer Creek Conservation Report 1960" Department
of Commerce and Development

"Spencer Creek Conservation Report, 1962," Conservation
Branch, Ontario Department of Lands and Forests.

"Technique in Landscape Planning, Landscape Evaluation",
A. E. Weddle.

"Zones of Visual Influence and Quantitative Analysis",
R. L. Hebblethwaite.

HISTORY

Ancaster - The Past, Present and the Future - A Brief; published by The Ancaster Township Historical Society, 1972.

"Before the White Man Came", M. G. Burkholder; Toronto, McClelland and Stewart, 1923. (in: Head of the Lake Historical Society).

"The Beginning of the History of Hamilton", T. R. Woodhouse; (in: Wentworth Bygones, No. 5, 1964, pp. 23-27).

"Burlington Bay, Beach and Heights in History", M. Holden (in: Wentworth Historical Society, Journal and Transactions, Vol. 2, 1899, pp. 19-37).

"Burlington Heights, Historically and Geologically" John H. Land, (in: Wentworth Historical Society, Vol. 2, 1924, pp. 40-42).

"Early Post Offices of the Oakville-Burlington Area", M. Rosenthal; (in: BNA Topics, Vol. 20, No. 4, April, 1963, pp. 96-102).

"The Garden of Canada - Burlington, Oakville and District", M. Craig, Toronto, William Briggs, 1902.

"The Hamilton Centennial, 1846-1946", A. Wingfield, Hamilton Centennial Committee, 1946.

"Hamilton - The Story of a City", L. Evans; Toronto, Ryerson Press, 1970.

"The Head of the Lake: A History of Wentworth County", C. Johnson; Hamilton, Robert Duncan, 1958.

"The Historical Evolution of Hamilton Beach", W. Johnson; (in: Head-of-the-Lake Historical Society Papers and Records, Vol. 2, 1960, pp. 31-35.)

"History of the Town of Dundas", T. R. Woodhouse; published by the Dundas Historical Society, 1965.

"Illustrated Historical Atlas of the County of Wentworth, 1875", published by the Dundas Valley School of Art, Dundas, Ontario.

"Indian Relics and Implements Found in and Around the City of Hamilton", F. Wood, (in: Wentworth Historical Society, Vol. 6, 1908, pp. 5-16).

HISTORY (Continued)

"LaSalle's Arrival in Burlington Bay in 1966",
T. R. Woodhouse; (in: Wentworth Bygones, No. 8,
1969, pp. 2-5).

"A Mountain and a City: The Story of Hamilton",
M. F. Campbell, Toronto, McClelland and Stewart,
1966.

"Oakville and the Sixteen, H. C. Mathews, Toronto,
University of Toronto Press, 1971.

"Oakville's 100 Years, 1857-1957", C. J. Young,
Oakville, 1957.

"Out of the Storied Past", M. G. Burkholder,
Hamilton, 1968. A selection of historical sketches
which first appeared serially in the Hamilton
Spectator.

"From Pathway to Skyway: A History of Burlington",
C. Emery, Confederation Centennial Committee of
Burlington, 1967.

"Pardon my lunch bucket, A look at the new Hamilton..
.... with a bit of the old thrown in", published
by the Corporation of the City of Hamilton on its
125th anniversary.

"Pioneer Inns and Taverns, Vol. II", E. C. Guillet;
Ontario Publishing Co., 1956.

"The Story of Hamilton, M. G. Burkholder, Hamilton,
David-Lisson, 1938.

"Topographical Sketch of Hamilton as it was in 1830
and 1881", Thomas H. McKenzie, (in: Wentworth
Historical Society, Vol. 1, 1892, pp. 178-81).

"The Trail of the Black Walnut", G. Reaman, Toronto
McClelland and Stewart.

LAND USE AND PLANNING

"Amendment No. 70 of the Hamilton-Wentworth Planning Area, Saltfleet Section", Hamilton-Wentworth County Planning Board.

"Ancaster Township Report". McCormick, Rankin and Associates.

"Barton Street Feasibility Study", Hamilton-Wentworth Suburban Road Commission, 1969.

"Draft 'Recreation' May 14, 1970, The City of Hamilton Open Space", City of Hamilton Planning Department.

"Official Plan for the Residential Enclaves North of Barton Street", City of Hamilton Planning Department, (Revised November, 1970).

"1967 Official Plan for the Undeveloped Areas. Amendment 228 of the Hamilton Planning Area:, Revised 1970.

"Saltfleet Community", Ekistics Ltd., Harold Schekenbruger, Hamilton Ontario Housing Corporation.

"Saltfleet Community Development, Planning Policy", Ontario Housing Corporation.

INFRASTRUCTURE

"County Road 1 at Lowville Feasibility Report",
County of Halton.

"County Road No. 1 Q.E.W. to Hwy.5 Feasibility Report",
County of Halton.

"County Road No. 2 Lakeshore to Q.E.W. Feasibility Study",
County of Halton.

"County Roads No. 3 and 111 at Stewarttown Feasibility
Report", County of Halton.

"County Road No. 3 at Hornby Feasibility Report",
County of Halton.

"County Road No. 18 at No. 2 Sideroad Feasibility
Study", County of Halton.

"County Road No. 20 at Limehouse Feasibility Study",
County of Halton.

"Draft Official Plan 1970 The City of Hamilton Rapid
Transit (Transportation Division One), City of
Hamilton Planning Department.

Feasibility Study, Esquesing-Chinguacousy Boundary
Road at Norval, County of Halton, McCormick, Rankin,
& Associates Limited.

"Functional Plan - Margaret Drive Extension, Lakeshore
Road to Upper Middle Road", 1968, Corporation of the
Town of Oakville, Fenco.

"Functional Planning Study - Trafalgar Road and
Reynolds Street", 1972, Corporation of the Town
of Oakville.

"Halton Region Conservation Authority Economic Study
of Flood Control Works in the Town of Burlington",
James F. MacLaren Limited.

"Hamilton Area Rapid Transit Study", Physical
Feasibility Report, July 1970.

"Hamilton Transportation Strategy Study", Study
Approach 1972, City of Hamilton, Kates, Peat, Marwich
& Co.

"Hamilton Water Treatment Plant Design Transmittal",
Revised June, 1970, Hames F. MacLaren Limited.

INFRASTRUCTURE (Continued)

"Niagara Escarpment Scenic Drive, Technical Report Vol. 2 and 3, Parkway Consultants.

"Niagara Escarpment Scenic Drive Feasibility Study", Parkway Consultants.

"Norval Bridge Feasibility Report", County of Halton.

"Report on Flood Control Works in the Town of Burlington for the Halton Region Conservation Authority", July 1964, James R. MacLaren Limited.

"Report on Sanitary Sewage System", 1972, Corporation of the Town of Oakville, Gore and Storrie Ltd.

"Report on Sewerage Survey for the City of Hamilton", June 1955, Proctor, Redfern and Laughlin.

"Report and Technical Discussion on the Water Distribution System for the City of Hamilton", January, 1971, James F. MacLaren Limited.

"Road Needs Study County of Halton - 1969", Duncan Hopper and Associates Limited.

"Roads Needs Study", County of Wentworth, 1969-70.

"Roads Needs Study Twp. Esquesing"

"Roads Needs Study Twp. Nesagaweya"

"Road Programming Study", 1971-1981, Town of Ancaster, McCormick, Rankin and Associates Limited.

"Submission of Ontario Hydro to the Solandt Commission", July 31, 1971.

"Storm Water Sewer Trunks, Oakville Storm Drainage", Town of Oakville, Department of Public Works, J. M. Tomlinson & Associates Ltd.

"Town of Burlington Traffic Planning Report", 1965-1985, Damus and Smith Limited.

"Urban Roads and Services 1970-1980 Programming Study", Township of Saltfleet, Damus and Smith Limited.

"Wentworth-Burlington Suburban Bus Study", December, 1971, De Leuw, Cather Consulting Engineers.

CHAPTER 2: SUMMARIES OF CRITERIA AND LEGIS- LATION

Water Quality Criteria in Ontario

Consisting of "Guidelines and Criteria for Water Quality Management in Ontario", Ministry of the Environment, June 1970. (Copies of this booklet are included in the Data Bank File No. 05.02.)

Guidelines for The Control of Water Quality -

The water resources of Ontario must meet many needs, some of which are in conflict. The standards established, therefore, must be based on the best interests of the people in Ontario. These interests require the preservation, and restoration where necessary, of the quality of our water for the greatest number of uses. The use of water for the assimilation and dilution of treated waste effluents must take into consideration industrial supply, recreation, aesthetic enjoyment and the propagation of fish and wildlife.

For each use of water there are certain water quality characteristics, identified as criteria, which should be met to ensure that the water is suitable for that use.

Water quality standards will be established by the Ministry of the Environment for waters of drainage basins or parts thereof with important water uses, following consultation with agencies or persons having an interest or responsibility in the present or future use of the water in the basin for which the standards are to be established.

Water of a higher quality than that required by the standards will be maintained at that higher quality unless in the public interest an alteration of the quality is consistent with the protection of all uses which are in accordance with the water quality standards established.

There should be a constant effort to improve the quality of water, for it is recognized that the improvement of the quality of water makes it available

for more uses.

Requirements for effluents and land drainage based on the applicable water quality standards, or criteria where such standards do not exist, will be established by the Ministry in order to maintain acceptable water quality. More stringent methods of control and/or treatment of waste inputs and land drainage may become necessary as the use of water changes or increases, or as standards are re-defined.

In establishing effluent requirements from water quality standards a reserve capacity of the receiving water should be set aside to provide an adequate margin of protection in recognition of the limitations of water management theory and practice.

All wastes prior to discharge to any receiving watercourse must receive the best practicable treatment or control. Such treatment must be adequate to protect and wherever possible upgrade water quality in the face of population and industrial growth, urbanization and technological change.

Criteria and standards of water quality and effluent requirements will be defined quantitatively only where sound numerical information is available; otherwise, they will be described in appropriate detail. They will be re-defined from time to time in the light of new evidence.

Water Quality Criteria - The following criteria for water quality are a set of numerical and descriptive characteristics, carefully defined, and applicable to each major water use category such as agriculture; fish, other aquatic life and wildlife; industrial water supply; recreation and aesthetics. The criteria are described for use in establishing Water Quality Standards for drainage basins which in turn will be used to determine Effluent Requirements for discharges of wastes and land drainage.

The responsibility for demonstrating that a waste

effluent is harmless to water uses in the concentrations to be found in the receiving waters, rests with those producing the discharge. Zones of passage and/or mixing adjacent to outfalls at the limit of which water quality may be critical, will be prescribed by the Ministry.

Zones of Passage and Mixing - Mixing zones in the vicinity of outfalls should be restricted as much as possible in extent and should provide for the safe passage of both fish and free-floating and drift organisms. Every precaution should be taken to ensure that at least two-thirds of the total cross-sectional area of a river or stream is characterized by a quality which is entirely favourable to the aquatic community at all times.

Statistical Problems in Setting Limits - The systematic surveillance of water and waste sources requires the collection of data to clearly represent the problems being studied. The problems are many and varied. In one case the average condition over a period of time may be required and the question arises over what period shall the average or median be taken; in another, the limit may be a figure that should not be exceeded at any time. If a standard for a certain constituent is "none", the question arises "how small an amount does this mean?" The answers vary with the type of standard and the circumstances governing the fluctuation of the indicator. In ground water problems, only the average over a considerable period of time is significant. Where required in the setting of standards and effluent requirements, definitions of limits will include the applicable sampling conditions, quantitative values and rates of discharge.

Water Quality Criteria for the Protection
of Fish, Other Aquatic Life, and Wildlife (F&W)

(Criteria are given in this section, on pages
to in the manual, on):

Dissolved Materials
pH, Alkalinity, Acidity
Temperature
Dissolved Oxygen
Carbon Dioxide
Oil
Turbidity
Settleable Materials
Colour and Transparency
Floating Materials
Tainting Substances
Radionuclides
Plant Nutrients and Nuisance
Growths, and Toxic Substances

Criteria of Water Quality for Aesthetics
and Recreation (A&R)

All surface waters should be capable of supporting life forms of aesthetic value. The positive aesthetic and recreational values of water should be attained through continuous enhancement of water quality. Surface waters should be of such quality as to provide for the enjoyment of recreational activities such as hunting and fishing which are based on the utilization or consumption of fish, waterfowl and other forms of life.

The aesthetic and recreational values of unique or outstanding waters should be recognized and protected by development of appropriate water quality standards for each individual case. To retain or establish unspoiled wilderness values, it may be necessary to control access by mechanized methods of transportation.

General criteria for recreation and aesthetic use and specific criteria for total body

contact recreation follow:

A&R-1 General Criteria for Recreation and Aesthetics

Surface waters should be free of substances attributable to discharge of waste or land drainage which may impair aesthetic or recreational use, as follows:

- (1) Materials that will settle to form objectionable deposits.
- (2) Floating debris, oil, scum and other matter.
- (3) Substances producing objectionable colour, odour, taste or turbidity.
- (4) Materials, including radionuclides, in concentrations or combinations which are toxic or which produce undesirable physiological responses in humans, fish and other life and plants.

A&R-2 Criteria for Total Body Contact Recreation

Surface waters for total body contact recreational use should be free of substances attributable to discharge of waste or land drainage as follows:

- (1) Materials which will cause the pH to change beyond the range 6.5-8.3.
- (2) Materials which will obscure visibility in the water. In designated swimming and diving areas, clarity should be such that a Secchi Disc on the bottom is visible from the surface.
- (3) Conditions which will cause the water to exceed 85°F.
- (4) Microbiological Criteria

Water used for body contact recreational activities should be free from pathogens including any bacteria, fungi, or viruses that may produce enteric disorders or eye, ear, nose throat and skin infections. Where ingestion is

probable, recreational waters can be considered impaired when the coliform, fecal coliform, and/or enterococcus geometric mean density exceeds 1,000, 100 and/or 20 per 100 ml respectively, in a series of at least ten samples per month, including samples collected during weekend periods.

If these criteria are exceeded, it will become necessary to determine the cause and initiate corrective action.

When evaluating a given area of water for recreational use, the appropriate numbers of samples, and the choice of tests to be performed should be determined by consultation between sampler and analyst, prior to sampling. An effort should be made to increase utilization of the fecal coliform and enterococcus tests since these presently appear to be the more relevant guides to the bacterial quality of bathing waters.

Air Quality Standards in Ontario

Standards for the measurement and control of both emitted contaminant levels and desirable ambient air quality are recorded in regulation 15, made under the Air Pollution Control Act, September 1972. The following excerpts from this regulation indicate the relevant quantitative standards and values.

Control of Air Contaminants - 5 - (1) The standards for concentrations of air contaminants from stationary sources of air pollution at a point of impingement are prescribed in Schedule 1.

SCHEDULE 1

STANDARDS FOR EMITTED CONTAMINANTS

Item	Column 1 Name of Contaminant	Column 2 Units of Concentration	Column 3 Amount of Concentration at point of impingement	Column 4 Period of Time
6	Carbon Monoxide	parts of carbon monoxide per one million parts of air by volume	5.0 average	30 minutes
8	Dustfall	tons of dustfall per square mile	15 total	30 days
9	Fluorides	parts of fluorides per one billion parts of air by volume	5.0 average	30 minutes
12	Hydrogen Sulphide	parts of hydrogen sulphide per one million parts of air by volume	0.03 average	30 minutes
13	Iron	micrograms of iron per cubic metre of air	10 average	30 minutes
14	Lead	micrograms of lead per cubic metre of air	20 average	30 minutes
16	Nitric Acid	micrograms of nitric acid per cubic metre of air	65 average	30 minutes
17	Nitrogen Oxides	parts of nitrogen oxides per one million parts of air by volume	0.25 average	30 minutes
18	Silver	micrograms of silver per cubic metre of air	1 average	30 minutes
19	Sulphur Dioxide	parts of sulphur dioxide per one million parts of air by volume	0.3 average	30 minutes
20	Suspended particulate matter	micrograms of suspended particulate matter per cubic metre of air	100 average	30 minutes

Air Quality - 16 For the purpose of attaining a high quality environment, the Minister shall use the values prescribed in Schedule 2 for controlling ambient air quality. R.R.O. 1970, Reg. 15, 5.16

SCHEDULE 2

CRITERIA FOR DESIRABLE AMBIENT AIR QUALITY

Item	Column 1	Column 2	Column 3	Column 4
	Name of Contaminant	Units of Concentration	Amount of Concentration in Ambient Air or Forage	Period of Time
2	Carbon Monoxide	parts of carbon monoxide per one million parts of air by volume	40 average 15 average 8 average	1 hour 8 hours 24 hours
3	Dustfall	tons of dustfall per square mile	20 total 13 mthly average	30 days 1 year
4	Fluorides	parts of fluorides per one billion parts of air by volume	1.0 average 0.5 average	24 hours 30 days
7	Hydrogen Sulphide	parts of hydrogen sulphide per one million parts of air by volume	0.02 average	1 hour
8	Lead	micrograms of lead per cubic metre of air	15 average 10 average	24 hours 30 days
9	Lime	micrograms of lime per cubic metre of air	10 average	24 hours
10	Oxidants	parts of oxidants per one million parts of air by volume	0.10 average 0.03 average	1 hour 24 hours
11	Oxides of Nitrogen	parts of oxides of per one million parts of air by volume	0.20 average 0.10 average	1 hour 24 hours
12	Soiling	co-efficient of haze per 1000 feet of air	1.0 average 0.45 average	24 hours 1 year
13	Sulphation	milligrams of sulphur trioxide per 100 square centimetres	0.4 average per day	30 days
14	Sulphur Dioxide	parts of sulphur dioxide per one million parts of of air by volume	0.25 average 0.10 average 0.02 average	1 hour 24 hours 1 year
15	Suspended particulate matter	micrograms of suspended particulate matter per cubic metre of air	90 average 60 geometric	24 hours 1 year

Hamilton Harbour
Water Chemistry

Since the study was completed a substantial report on the Hamilton Harbour has been prepared by the Ontario Ministry of the Environment (MEO, May 1974). This 1974 report has been briefly reviewed and the information contained therein compared with our previous work on the harbour as described in the working papers.

Salient Features of the Harbour -

The harbour consists of two basins, Cootes Paradise and the Harbour proper, with a narrow connection between the sections and between the Harbour and Lake Ontario. The confined nature of Hamilton Harbour restricts mixing between the harbour and lake with a consequent variation in water properties between the harbour lake.

There is a net flow of about 250 cfs through the harbour, upon which is superimposed an interchange flow both into and out of the harbour as a result of lake level fluctuations and density-driven currents. The total flow resulting from these mechanisms has been estimated at about 10^9 cubic meters per year each way (2100 cfs). This is clearly substantially greater than the long-term mean flow and dominates the outflow of material.

The harbour itself receives industrial and municipal effluents in large quantities and reactions within the harbour extensively modify and reduce these pollutants before their release to the lake. This is particularly noticeable for phosphorous where the "stock" in the harbour corresponds to one thirtieth of the annual loading as compared to about one quarter of the loading to be expected if no reaction took place.

During the summer months the harbour is normally stratified and due to the high oxygen demand results in an anoxic condition.

Major water quality problems in the harbour are: low oxygen levels, high nutrient concentrations,

and high bacteria populations, as well as bottom sediments which appear to be toxic to most, and in place all organisms. Fish obtained from the harbour have been found to contain high levels of PCB's (up to 11.7 ppm). The bottom sediments are high in lead, cadmium and mercury, particularly in the harbour offshore from Sherman Inlet.

Hamilton Harbour is eutrophic with surface algae growths along the shoreline and high chlorophyll a values, typically between 20 and 40 ug/litre with peaks up to 100 ug/litre.

Dissolved Oxygen -

The dissolved oxygen levels in the harbour basin vary with depth as indicated in an extensive survey undertaken by the Ministry of the Environment during 1972, (MOE 1974). Surface concentrations remain high, above 8 ppm, except for isolated short-term incidents; however, the hypolimnetic waters are low in oxygen with concentrations commonly below 2 ppm for most of the summer. The hypolimnion at all locations in the harbour dropped to below 5 ppm D.O. at least once during the 1972 survey, with the least affected area being the north-east corner of the harbour.

The oxygen deficit is being caused by an estimated 10^5 kgms per day, C.O.D. largely from industrial wastes, a benthic demand from the extensive areas of organic bottom sediments and from decaying phytoplankton sinking into the hypolimnion. Reduction of the C.O.D. loading would not cause a rapid recovery of the D.O. until the other two problems were resolved.

Nutrient Concentrations -

The harbour receives a high input of nitrogen and phosphorous of 11,000 kgm of ammonia and nitrate (measured as nitrogen) and 1,300 kgm of phosphorous per day. In early 1974 Stelco began directing ammoniacal waste through the Hamilton Wast Treatment Plant and this should reduce the ammonia loadings substantially.

Two major impacts on the phosphorous loading occur. The first is the removal of approximately three-quarters of the phosphate from the Hamilton S.T.P.; this S.T.P. accounts for about 75 per cent of the total load, in Windermere basin by biological assimilation. A similar assimilation of the Dundas nutrients takes place in Cootes Paradise.

The second major influence is the precipitation of the PO_4 as FePO_4 . Without some such reduction, even with PO_4 removal at the Hamilton S.T.P. the loading would still exceed Vollermeiders' dangerous limit for extensive eutrophic conditions.

The ferric phosphate-hydroxide relationship is complicated by the existence of complex ions such as FeHOP_4^+ . Likewise, less than one per cent of the iron and phosphorous is complexed at a pH of 5; however, a larger percentage is complexed if pyrophosphate is present (AWWA Committee Report, 1970). Under these circumstances at a concentration of total (Fe) of 0.6 mg/l and total ($\text{P}_2\text{O}_7^{4-}$) of 0.3 mg/l as P, 99 per cent of the pyrophosphate is complexed with ferric iron (AWWA Committee Report, 1970).

Reduced iron discharges without similar reduction in the phosphate loading will probably result in phosphate being retained either in solution or in fine suspension, thereby increasing the total and soluble phosphorus concentration in Hamilton Harbour. A reduction in the phosphate discharge should not increase the dissolved iron concentration.

At the present time the low D.O. levels in the harbour result in the release of precipitated PO_4 back into the water body. Consequently, a solution of the nutrient problem requires in addition to possible action at the sources, some means of improving the minimum oxygen concentrations above the sediments.

Effects of Filling -

During the study a simple series reaction model was

used to estimate the effects of filling on the D.O. concentrations in the harbour and the load exerted by the harbour water on the rest of Lake Ontario.

The model assumed a fully mixed situation in each compartment and simple modified Streeter-Phelps chemical reactions. Mixing between reactors was simulated by a flow both ways between the reactors and between the last reactor and a sink (Lake Ontario). The rate coefficients used were based on literature sources and adjusted to fit the harbour data available at the time.

Results from the study showed that the D.O. level in the harbour would drop by 0.2 - 0.30 ppm for a 10 per cent infilling of the harbour and that the B.O.D. load on the lake would increase by about 500 lbs./day.

The Ontario Ministry of the Environment has developed a two-dimensional model for the harbour chemistry based on the results of 1972 field studies (Ministry of Environment 1974). Further work is progressing on a three-dimensional model, which should facilitate a more detailed understanding of the harbour chemistry.

Shore Protection Techniques

At the present time, with the exception of the beaches along the lake side of the beach strip, the shoreline is undergoing natural erosion, with a westward drift of material to form the beach strip. At this western end there is probably some loss of material into deeper water of the lake.

Considering an isolated section of the shoreline, there is a certain available capacity for moving material along or out from the shoreline. If the supply of material to the section is less than this capacity wave action will attack the shore with the erosion rate dependent on the resistance of the shore material.

In the Great Lakes Basin the situation is further complicated by the long-term variations in water level. Long-term variations result in beaches that were stabilized at one level lacking sufficient resistance to absorb the wave energy during higher water levels. Water level control is therefore one method of reducing shoreline damage.

Some other specific techniques for shoreline protection are outlined briefly below.

Beach Nourishment -

This is the process whereby offshore deposits of suitable material, usually sand, are dredged and supplied to the long-shore drift at the updrift end of the area to be protected.

The beneficial aspect of this approach is that it maintains a beach-type shoreline, allowing ready access and a range of recreational pursuits. The disadvantage of this form of shore protection is that a commitment to a continuing management program is required.

In general the economics favour this approach in sections where a considerable length of shoreline can be treated by supplying material at one point.

Beach Stabilization - Groynes

Stabilization of the beach involves constructing groynes out from the shore that reduce the effective transporting capacity of the waves. It is apparent that this action will, in many cases, result in accelerated erosion down-drift of the groynes.

Various alternative forms of groynes are shown in Figures 1, 2, and 3. Groynes are acceptable where there is a sufficient supply of suitable material in transit along the shore to infill between the groynes and to form a stable beach.

The particular form of construction to be adopted in any area depends on the foundation conditions, wave

action and proposed use of the shoreline.

Where the soil permits pile driving, either sheet piling or the soldier pile construction of Figure 1 can be used. If aesthetic considerations are important, concrete trapezoids anchored laterally by piles can be used as shown in Figure 2.

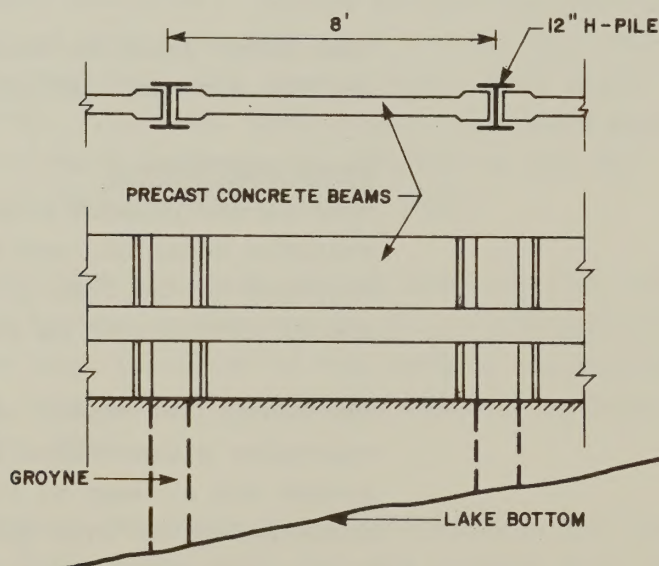


FIGURE 1 - H Pile and Concrete Beam Groyne

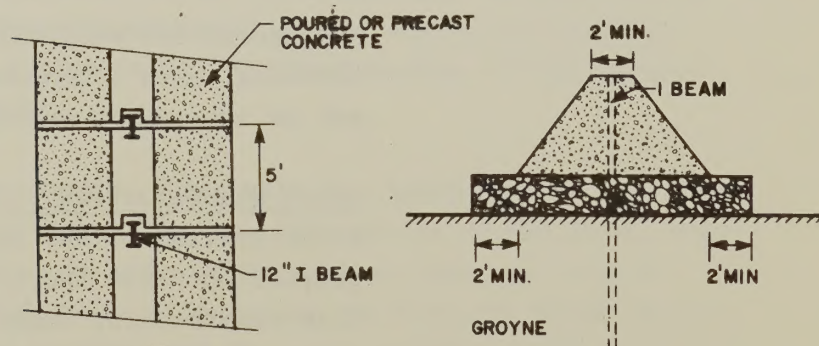


FIGURE 2 - Concrete Trapezoid Groynes

In sections of shoreline where pile driving is difficult or expensive, such as in rock or in till containing large boulders, a rubble mound as shown in Figure 3 forms an economical solution. Uneven settlement can require maintenance and access should be available in the future for heavy equipment.

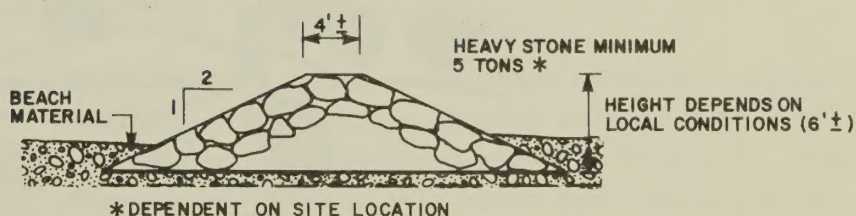


FIGURE 3 - Rubble Mound Groyne

Breakwaters - Islands -

Breakwaters act by absorbing wave energy before the waves reach the shoreline. The normal form of modern breakwater is a mound of stone or specially-shaped concrete blocks placed in front of the area to be protected as shown in Figure 4. In general breakwater construction is an expensive form of shoreline protection and is of use only if the extra cost can be justified by the creation of protected waters.

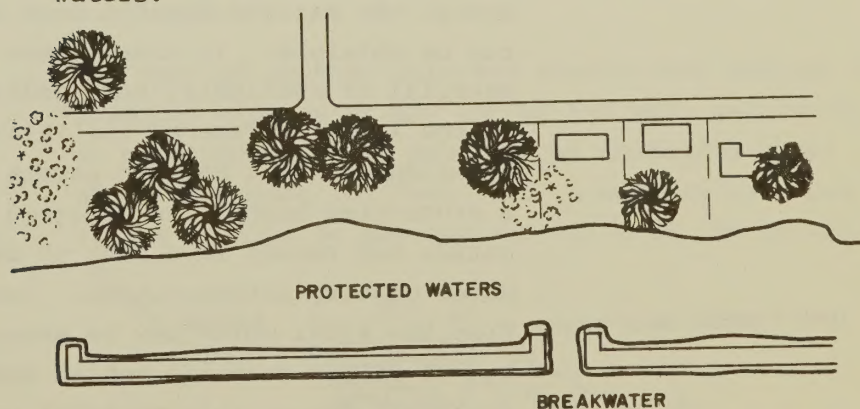


FIGURE 4 - Breakwater

By infilling behind the breakwater to create an island as in Figure 5, additional land can be created, with the added benefits of a protected waterfront over a length at least twice that of the breakwater.

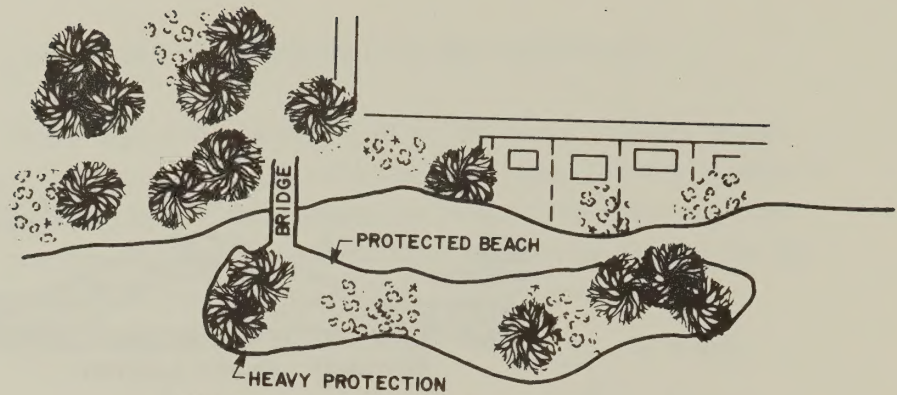


FIGURE 5 Infilled - Island Breakwater

This type of construction will interrupt sediment transport, with a build-up of the beach updrift and increased erosion downdrift of the breakwater. These changes must be allowed for in developing uses for the protected water and in determining the natural flushing action of the protected water.

Construction of such an island is expensive and for an island 150 feet inside could be as high as \$1,200 per linear foot. Careful design is essential, taking advantage of the bottom topography to reduce both the volume of material required and the effective impact of the waves. By appropriate design the maximum benefit from the updrift beach can be obtained. In areas where sufficient littoral material is available, some additional protection on the lakeside face of the island can be obtained by orienting this fact to permit the build-up of a protective beach. An enclosed water body of this nature may result in a lack of circulation and water quality deterioration. Inert waste material from the steel works may be acceptable both as fill and as filter material behind the shoreline protection. Use of this material could result in substantial cost reduction.

Possible benefits of the enclosed water are uses such as a small-boat harbour, for swimming in the warmed water, and as an aesthetic feature along a relatively uniform shoreline.

Structural Shore Protection -

This approach involves structural measures that enable the exposed shore to resist erosion by wave action.

The simplest, cheapest and most effective approach feasible is normally a sloping wall of rubble or shaped concrete blocks as shown in Figure 6. The dimensions and materials shown are indicative of those likely to be effective in the study area. However, the armour size could be reduced substantially in specific areas since size requirement is quite sensitive to the offshore topography.

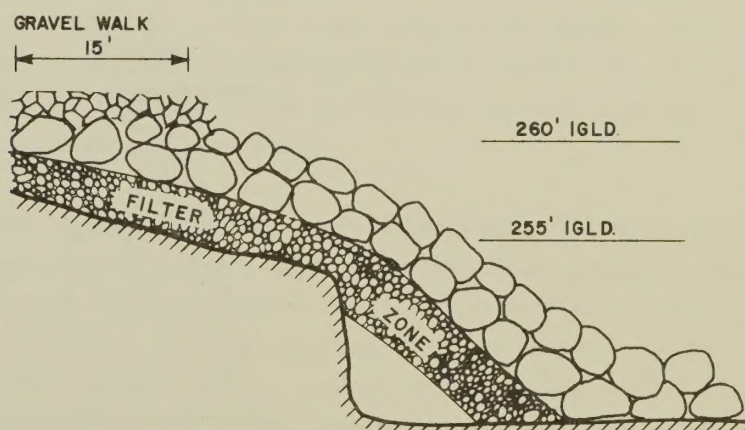


FIGURE 6 - Rubble Seawall

The type of section selected should take account of possible erosion at the toe of the wall and run-up or overtopping. For sections of shoreline bluff above elevation 260 feet IGLD* a section as shown in Figure 6 would be appropriate while if the general

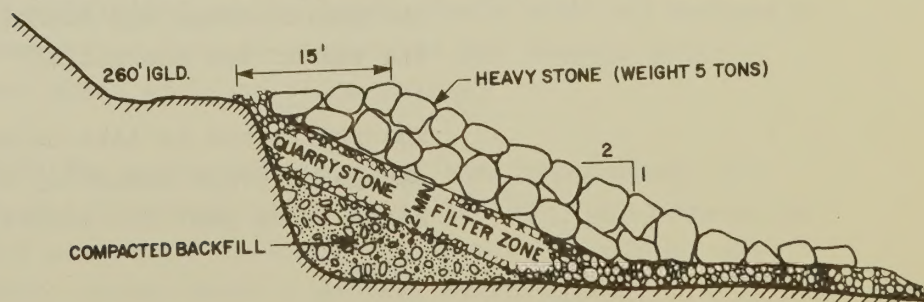


FIGURE 7 - Rubble Seawall

* International Great Lakes Datum

elevation of the shore is below 260 feet IGLD the section shown in Figure 7 would be appropriate. Maintenance of a rubble wall is a relatively simple matter, providing access is available.

An alternative form of protection is the use of a rigid concrete or sheet-pile structure, a typical section being shown in Figure 8. In a structure of this type it is very important to avoid undermining of the toe of the wall or overtopping and scouring of the material behind the wall, particularly as damage by tilting or movement of the wall is very difficult to repair.

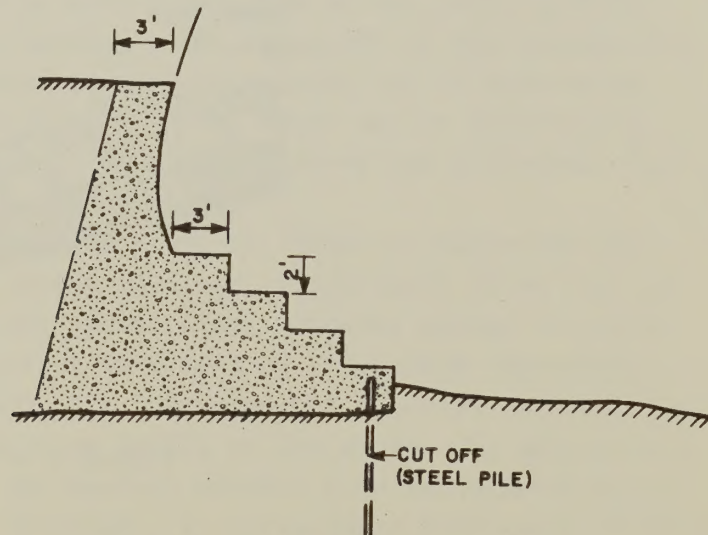


FIGURE 8 - Concrete Pile Seawall

Any form of structural protection should be designed with careful attention to blending the design into the surroundings and minimizing the restrictions on the use of the shoreline.

The variations in lake level should be considered in design to avoid unsightly construction or damage to beach areas that are normally exposed at low water levels.

Study Area Protection -

The existing study area has numerous narrow beaches along the Saltfleet shoreline which with a combin-

ation of groynes and beach nourishment could supply adequate protection. Some local protection at points such as Fifty Point might still be required using rubble protection around the point.

If offshore islands or breakwaters are used along this shore, maintenance of the beach material westward of the breakwater should be a design requirement.

In Trillium Bay particularly, the shallow offshore depths would suggest that an offshore structure could be constructed at lower cost than in most other sections of the open lake study area. Another possible breakwater location would be in the Fifty-Point area where structural protection may be required in any case.

Along the north shore east from Brant Street, beach development is much less pronounced at present and the naturally available littoral material is very limited. It is anticipated that an expansion of structural protection using rubble walls would be the main thrust in any protection plan, although the extent to which beaches can be economically developed should certainly be pursued. In local areas such as near Bronte Harbour and Coronation Park the existing beaches should be protected from erosion.

Along the beach strip protection should certainly be maintained by the beach itself with any necessary remedial action to compensate for changes along the other sections of shoreline.

With the protected waters of Hamilton Harbour and Cootes Paradise, wave action is much less pronounced and protective rubble where required would be adequate except where a natural beach exists.

applicable to the Waterfront Study. They are intended only as guides to the material contained in the legislation; they should not be used as substitutes for the actual wording of the legislation.

The following acts and policies are summarized:

1. Acts to Establish the Regional Municipalities of Halton and Hamilton Wentworth
2. The Conservation Authorities Act
3. The Hamilton Harbour Commissioners Act
4. The Royal Botanical Gardens Act
5. Federal Government Marina Policy
6. Navigable Waters Protection Act
7. Pollution Abatement Incentive Act
8. The Environmental Protection Act
9. The Planning Act, Ontario
10. The Niagara Escarpment Planning and Development Act
11. The Parkway Belt Planning and Development Act
12. Parkway Belt Policy

Acts Establishing the Regional Municipalities of Halton and Hamilton Wentworth. Bill 151 and Bill 155 Province of Ontario (Copies in Data Bank, File No. 17.03 and 17.04)

- the regional boundary in Hamilton Harbour follows the north shoreline of the Harbour (Bill 151, p. 4);
- regional boundaries along Lake Ontario appear to follow the high water mark (Bill 151, p. 3, 4) and are subject to provisions of the Territorial Division Act Section 8 (2), RSO 1970;
- the Regional Council, before December 13, 1976, must prepare an official plan for the region and after approval by the Minister, all existing official plans and by-laws must be amended to conform with the plan (Bill 151, p. 31, 32; Bill 155, p. 29, 30);
- Regional Corporations may enter into agreements with area municipalities relating to approval of

plans of subdivision (Bill 151, p. 32; Bill 155 p. 30);

- any of the powers of the Minister, under the Planning Act, may be delegated to the Regional Council (Bill 151, p. 32; Bill 155, p. 30);
- the Regional Corporation shall have the sole responsibility for the collection and disposal of all sewage and may undertake a land drainage program and storm sewer system in conjunction with area municipalities. (Bill 151, p. 43, 44; Bill 155, p. 41, 42);

(Approval of waste management systems and disposal sites must be obtained in advance of construction from the Ministry of the Environment (Environmental Protection Act, R.S.O., 1971.)

- the Regional Corporation shall be deemed to be a municipality for the purposes of the Parks Assistance Act and the Community Centres Act and may pass by-laws for exercising powers conferred on boards of park management by the Public Parks Act (Bill 151, p. 84, 85; Bill 155, p. 83, 84);
- the Regional Corporation shall provide for the receiving, dumping and disposing of waste (Bill 151, p. 81; Bill 155, p. 80).

The Conservation Authorities Act, R.S.O. 1970 Chapter 78 (Copy in Data Bank, File No. 17.05)

- representatives are to be comprised of appointees of the Regional Councils (p. 4, 5);
- term of office is 3 years (p. 9);
- purpose of authorities is to further the conservation, restoration, development and management of natural resources other than gas, oil, coal and minerals (p. 11);

- powers include: (with certain restrictions) studies, research, surveys, purchase, lease, expropriation, determination of benefits and cost apportionment to municipalities, construction of dams and reservoirs, altering the course of streams, use of lands for recreation purposes, planting trees (p. 11 - 14);
- subject to approval of the Lieutenant Governor in Council, authorities may regulate: use of stream water; diversion of streams; location of irrigation ponds; location of structures in flood plains; placing or dumping of fill that will affect flooding; pollution or conservation of land (p. 15, 16);

The Hamilton Harbour Commissioners Act, 2 George V, Chapter 98, 1912 (Copy in Data Bank, File No. 17.10)

- Hamilton Harbour includes: Burlington Bay, Cootes Paradise, all inlets except Burlington Channel, all waterfront property, water lots, piers, docks, shores and beaches in and along the bay and waters (p. 2);
- the Commissioners have no jurisdiction or council over private property (p. 3);
- there shall be three commissioners one appointed by the City of Hamilton and two by the Governor in Council (Canada) (p. 2);
- purposes are (by implication) to: develop, improve, maintain and protect the harbour (p. 3);
- powers include: (with limitations) acquisition, expropriation, sale, lease, investment, regulation and control of the use and development of all land and property on the waterfront within the limits of the harbour, regulation and control on navigation, maintaining order and control of operation of small craft (p. 3, 6).

The Municipal Act, R.S.O. 1960, Sec. 377; 43 p. 194
(Copy in Data Bank; File No. 17.11)

- Councils of municipalities may pass by-laws for making, improving and maintaining public wharves, docks and slips and for preserving shores, bays, harbours, rivers or waters and banks thereof.

The Royal Botanical Gardens Act, 1941
(Copy in Data Bank, File No. 17.17)

- the Board consists of ten members most of whom are nominated by the City of Hamilton (p. 1, 2);
- the Board acts as a separate Board of Park Management, under the Public Parks Act, for specific lands called the Royal Botanical Gardens (p. 1, 2, 4).

Federal Government Marina Policy (revised Oct. 1971)
(Copy in Data Bank, File No. 17.12)

- purpose of the policy is to encourage development of public facilities for recreational boaters, especially tourists;
- the Federal Government may build breakwaters and provide initial dredging of public areas, provided the developer establishes onshore facilities of equal value. Land costs do not count;
- grants are not available; breakwater construction and/or dredging will be performed by the Federal Government;
- breakwaters built by the Federal Government will be of the most economical design; extra expenses must be paid by the developer;
- costs of maintaining dredged depths can be shared by the Federal Government and the developer;
- applications for assistance are made to the Depart-

ment of Public Works, 25 St. Clair Avenue East,
Toronto.

Navigable Waters Protection Act, R.S., C. 193, S.1
(Copy in Data Bank, File No. 17.13)

- no construction is permitted in navigable waters without approval of the Minister of Transport (Canada) (p. 2);
- no vessel or material may be left in a place that could interfere with navigation (p. 6 - 9);
- the Minister of Transport may select certain locations for dumping stone, gravel, earth, cinders, ashes or other material (p. 10).

Control of Waters and Land Under the Water

- navigable waters are controlled by Minister of Transport, Canada (Navigable Waters Protection Act; file 17.13);
- Hamilton Harbour waters and Cootes Paradise and all land and property on the waterfront (other than private land) are controlled by the Hamilton Harbour Commissioners (The Hamilton Harbour Commissioners Act; File 17.10);
- municipal boundaries extend to the centre of Lake Ontario (The Territorial Division Act Section 8(2); File 17.22);
- lands under navigable waters are apparently Crown land vested in the Province except where the land has been specifically granted to others (water lots). (The Beds of Navigable Waters Act, File 17.23 and discussions with Titles Section, Ministry of Natural Resources);

(We have made no attempt to unscramble these apparently conflicting laws.)

Pollution Abatement Incentive Act, Ontario 1970, C.62
(Copy in Data Bank, File No. 17.16)

- the Minister of Energy and Resources Management may make grants to municipalities or individuals up to the amount of Retail Sales Tax paid for equipment used for pollution abatement or for the treatment or disposal of waste (p. 4).

The Environmental Protection Act S.O. 1971 Chapter 86
(Copy in Data Bank, File No. 17.21)

- the purpose of the act is to provide for the protection and conservation of the natural environment (p. 3);
- it applies particularly to motor vehicles, water, waste management, abandoned motor vehicles, sewage systems and litter.

The Planning Act, R.S.O. 197, Chapter 349, January 1974
(Data Bank, File 17.25, 17.26)

- gives the Treasurer of Ontario and Minister of Economics and Intergovernmental Affairs, power to define and name planning areas (p. 4);
- the municipal council appoints the planning board of a planning area (p. 5);
- every planning board shall investigate and survey the physical, social and economic conditions relating to the planning area and shall prepare a plan for the solution of problems affecting the planning area; the public must participate in developing the plan (p. 8, 9);
- the plan as finally prepared and recommended by the planning board shall be submitted to the municipal council who may, by by-law, adopt the plan; upon adoption, the plan shall be submitted to the Minister of Housing who may then approve the plan (p. 9, 10);

- define and separate communities,
 - provide service corridors,
 - provide a land reserve for unforeseen uses,
 - offer open space and recreation facilities;
- the uses range from recreational areas to power lines (p. 9);
 - proposed locations of Parkway Belts and Mini Belts are shown throughout the document;
 - outright purchase of lands by the Province is to be a major means of bringing the Parkway Belt into effect (p. 29).

Guidelines for Use By
Developers on River
and Lakefront Flood-
lands

Lake and stream levels fluctuate due to both short- and long-duration stimulus, as outlined in Volume No. 1. The Ontario Ministry of Natural Resources, Conservation Authorities Branch, recognizing this, has drafted the following regulations in Section 27 of the Conservation Authorities Act, R.S.O. 1970. Chapter 98 states in part:

- (1) Subject to the approval of the Lieutenant Governor in Council, an authority may make regulations applicable in the area under its jurisdiction,
 - (e) prohibiting or regulating or requiring the permission of the authority for the construction of any building or structure in or on a pond or swamp or in any area susceptible to flooding during a regional storm, and defining regional storms for the purposes of such regulations;
 - (f) prohibiting or regulating or requiring the permission of the authority for the placing or dumping of fill of any kind in any defined part of the area over which the authority has jurisdiction in which in the opinion of the authority the con-

transportation, and social facilities (p. 4, 5);

- affected municipalities and the public must be given opportunities to review and comment on the Plan as is being developed (p. 5, 6).

The Parkway Belt Planning and Development Act, 1973
Bill 130 and Bill 128 (Data Bank, Files 17.27 & 17.01)

- the Treasurer of Ontario and Minister of Economics and Intergovernmental Affairs establish the Parkway Belt Planning Area and prepare a plan (Bill 130 p. 1; Bill 128 p. 1, 2);
- advisory committees must be established to participate in plan preparation (Bill 128 p. 2);
- the plan may contain policies on economic, social and physical development (Bill 128 p. 2);
- affected municipalities and the general public must be given opportunity to participate in the planning (Bill 128 p. 3);
- approval of the plan or amendments are by the Lieutenant Governor in Council (Bill 128 p. 4, 5);
- the Minister may, by order, amend local plans to make them conform with the Parkway Belt Plan (Bill 128 p. 7);
- the Minister may expropriate lands for the purpose of developing any feature of the plan (Bill 128 p. 8);
- the Minister may compensate municipalities for loss of taxes due to changes in assessment of lands in the Parkway Belt (Bill 130 p. 2, 3).

Parkway Belt Policy
(Data Bank, File 17.28)

- Parkway Belts are intended to:

- define and separate communities,
 - provide service corridors,
 - provide a land reserve for unforeseen uses,
 - offer open space and recreation facilities;
- the uses range from recreational areas to power lines (p. 9);
 - proposed locations of Parkway Belts and Mini Belts are shown throughout the document;
 - outright purchase of lands by the Province is to be a major means of bringing the Parkway Belt into effect (p. 29).

Guidelines for Use By
Developers on River
and Lakefront Flood-
lands

Lake and stream levels fluctuate due to both short- and long-duration stimulus, as outlined in Volume No. 1. The Ontario Ministry of Natural Resources, Conservation Authorities Branch, recognizing this, has drafted the following regulations in Section 27 of the Conservation Authorities Act, R.S.O. 1970. Chapter 98 states in part:

- (1) Subject to the approval of the Lieutenant Governor in Council, an authority may make regulations applicable in the area under its jurisdiction,
 - (e) prohibiting or regulating or requiring the permission of the authority for the construction of any building or structure in or on a pond or swamp or in any area susceptible to flooding during a regional storm, and defining regional storms for the purposes of such regulations;
 - (f) prohibiting or regulating or requiring the permission of the authority for the placing or dumping of fill of any kind in any defined part of the area over which the authority has jurisdiction in which in the opinion of the authority the con-

trol of flooding or pollution or the conservation of land may be affected by the placing or dumping of fill. R.S.O. 1970, c. 78, s. 27 (1); 1971, c. 64, s. 5 (1); 1973, c. 98, s. 8 (1-3).

Additional objectives and regulations pertaining to River and Lakefront Floodlands are as follows:

(Conservation Authorities Branch, Preliminary Guidelines)

Regional Storm Definition -

The regional storm used in the Halton-Wentworth Study area is Hurricane Hazel which affected everything south of the northern boundaries of the Saugeen, Grand, Credit, South Lake Simcoe, Metro, Central Lake Ontario and Ganaraska Conservation Authorities.

A Conservation Authority may define regional storm for purposes of its regulations without defining exactly where the regional storm floodline would occur at any given point; this may be done later on an individual property basis. The more usual procedure is to have a program of calculating the regional storm floodline and plotting same on detailed topographic mapping, especially in urban or near-urban areas. It is worth noting that, while the regional storm floodline does not have to be shown at the time the regulations are passed, fill regulation lines must be mapped and attached as schedules when fill regulations are put into force.

A number of points should be noted in connection with regional storm floodline calculation:

- (1) Flow calculations at any given point assume unrestricted flows, i.e., they assume no flow retarding structures upstream. This protects against the possibility that such upstream structures might eventually be removed or replaced with a structure of sufficient capacity to pass regional storm flows unimpeded.

- (2) Regional storm flows are assumed to be unrestricted but they may be controlled or uncontrolled. Controlled flows would occur where upstream reservoirs provide a certain amount of storage; this storage would be based on a projection of the reservoir-operating efficiency under regional storm conditions.
- (3) Regional storm flows assume no upstream valley constrictions but the actual floodline calculations take such constrictions into account and their ponding effect is reflected in the plotted floodline. We thus protect against both present conditions and possible future changes.

If a constriction in the valley, e.g., bridge is removed so that regional storm flows can pass unimpeded, the upstream floodline may have to be recalculated as some lands may well now be outside the floodline.

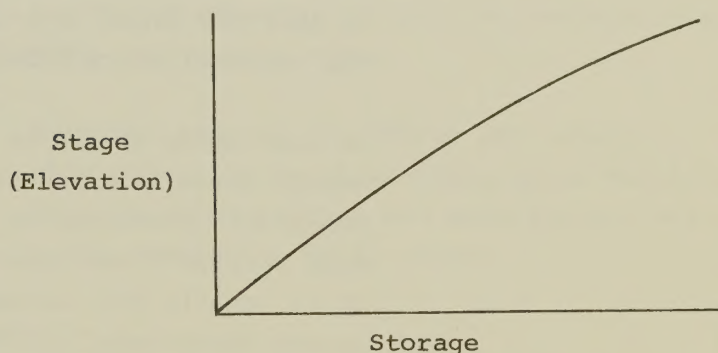
- (4) Regional storm floodline calculations are based on an assessment of future land use in the watershed, not past or present use. This allows for the significant flow increases which result from urbanization, agricultural land drainage, deforestation and so on.

In applying regional storm regulations to urban development, such as residential subdivisions, three watershed classes are utilized:

- (a) Watersheds less than 0.5 square miles in area. Drainage here is considered to be completely a municipal responsibility.
- (b) Watersheds of 0.5 to 1.0 square miles in area are considered Low Hazard.
- (c) Watersheds of more than 1.0 square miles in area are considered High Hazard.

High Hazard Watersheds

Each river valley acts as a natural reservoir. At any particular point in the valley there are hydraulic characteristics, such as, X-sectional area or roughness coefficient, which indicate the valley capacity to pass water flows and a stage-storage characteristic which indicates the ability of the valley to function as a natural reservoir. Each such X-section has a stage-storage curve (see below).



In high-hazard watersheds, no line in a subdivision is allowed to encroach beyond the regional storm floodline. The developer can be required to define the regional storm floodline to the Authority's satisfaction. No fill may be placed inside the floodline unless done in such a way that the existing stage storage and hydraulic characteristics are maintained; this means taking fill out at the same elevation as it was put in. In many cases, filling does not change the hydraulic characteristics but it reduces storage, thus creating more flooding downstream.

The placement of a bridge in the valley with less capacity than regional flood is acceptable if the effects of the constriction do not extend upstream of the property of the person or agency placing the structure.

Daytime parking within the regional storm line is allowed providing the parking lot elevation (based on either existing natural levels or regraded levels which do not affect the existing stage-storage curve)

is not more than 18 inches below the regional storm flood elevation. The reason for this restriction is that water depths of greater than 18 inches can, under heavy flow conditions, sweep cars away, thus creating downstream blockages at, and subsequently increased flooding above, channel constrictions such as culverts or bridges.

Low-Hazard Watersheds -

The only basic difference in the low-hazard watershed is that lot lines in a subdivision may extend into the regional storm floodplain.

In some cases it may be desirable to pipe (storm-sewer) flows in a low-hazard watershed; this is acceptable providing an adequate swale is left to pass surplus flows engendered by a regional storm. It is usually not economic to pipe flows in high-hazard watersheds.

Lake Levels and Regional Storms -

The levels of the Great Lakes can affect regional storm floodlines in the lower reaches of tributary rivers. When calculating this effect on regional storm floodline, the maximum observed monthly mean is used as the lake level. Since there is no way to define a regional storm on a lake, the criteria used for lakeside subdivisions is the level resulting from a 1 in 100-year wind and wave occurrence on a 1 in 100-year lake level.

A general recommendation for use where this calculation has not been carried out is given in Volume 1, which is essentially summarized as follows:

"By combining the highest daily mean water level of 248.19 feet (May 1973) with the Hurricane Agnes wind set-up of 1.44 feet, it is indicated that the maximum design water level for waterfront planning should be established at 250.0 feet (International Great Lakes Datum) and that seawall heights

should be at least 260.0 feet (IGLD) to protect against storm waves."

These forementioned values are general averages and at any specific site the values could be either lower or higher. Changes in the regulations governing Lake Ontario water levels will likewise change the above values.

Fill Regulations -

In a general discussion of fill regulations, the following points were noted:

- (1) Adequate mapping procedures are essential. This generally requires topographic mapping base in urban centres and good-quality air-photo mosaics in rural areas.

Summary -

Fill regulations and regional storm floodline regulations are a tool for governing the uses to which river valleys may be subjected. Failure to regulate such uses will ultimately lead to the necessity of other, and far more expensive, man-made controls such as reservoirs, channel improvements, diking and so on.

The development and enforcement of regional storm and fill regulations is the top priority item in the Provincial Water Control program of the Conservation Authorities Branch and probably the top priority item among all activities of Conservation Authorities which are supported by Provincial grants.

Additional information is available from the Regional Conservation Authority or the Conservation Authorities Branch, for specific development projects.

CHAPTER 3: DISCUSSION OF SELECTED RECOMMEN- DATIONS IN VOLUME ONE

This section contains comments and additional underlying reasons for certain recommendations in Volume I that are known to be of particular public interest.

Open Space Alternatives

The recommended locations for street-end parks, community parks and regional parks (Volume I, Concepts for Development) were carefully selected to fulfill a variety of waterfront recreation needs within reasonable distances of families, neighbourhoods and communities. If any recommended site cannot be acquired, an alternative site should be selected near the recommended location, otherwise some citizens will be deprived of opportunities which should be available to all people within easy travelling distance of the waterfront.

When proposals are made to change the use of waterfront land the choice will usually be between housing and open space uses. On Map 2, Volume I, those areas which should be eventually included in the public open space system are shown in solid green. Certain other blocks of land have been shown in striped green; these areas comprise a potential reserve for future recreation uses and are the most reasonable alternatives if recommended park sites cannot be obtained. If in the judgement of the Region, the Area Municipalities and the Conservation Authorities, these blocks of land will not be required for recreation purposes, they should be redeveloped, when appropriate, for housing within the recommended policies that call for preserving the shore in public ownership, (Volume I, Chapter 8).

Shoreacres and Tuck Creek

A community waterfront park is required between Sheldon Creek Park (0.60) and Spencer Smith Park (B 33). Shoreacres (B 12) is the most suitable site because it consists of large estates and is centrally located. If this site cannot be obtained, every effort should be made to acquire a suitable area at Tuck Creek (B 14). This is the only alternative location where there are some large properties that may become available for open space purposes. Park acquisition at this site will probably

be more difficult to implement, because at Tuck Creek several properties are involved. If neither Shoreacres nor Tuck Creek can be acquired, there appears to be no reasonable alternative site. If a suitable alternative cannot be acquired, there will be no space for community waterfront activities between Sheldon Creek Park and Spencer Smith Park, a distance of about five miles. In the face of increasing population and increasing leisure time, this distance is too great to provide reasonable waterfront access opportunities to the citizens. Furthermore, as boating increases in popularity, the need for a recreational harbour between Bronte and Burlington will become apparent. If a community park is not eventually established at Tuck Creek or Shoreacres Creek, there could be a serious gap in the chain of small craft harbours that is developing on Lake Ontario. Distances of more than five miles between ports are generally considered by boaters to be dangerous and the absence of a harbour between Bronte and Burlington would discourage boating trips along the shore.

Elizabeth Gardens

Additional multiple housing (apartments, townhousing or terrace housing) should be confined to selected locations on the waterfront. Wherever possible, these locations should be based on areas that are already partly developed in multiple housing, rather than by starting new multiple housing areas in a haphazard manner. At Elizabeth Gardens (B 1 to B 8) a multiple housing area is well established; it contains two motel sites that could be developed as multiple housing or as open space. If a community park is established at Shoreacres or Tuck Creek, a community park will not be required at Elizabeth Gardens, particularly when it is proposed to expand the adjacent regional park at Sheldon Creek. However if a community park is not provided at Shoreacres or Tuck Creek, and if the Sheldon Creek development is not achieved, one or both of the motel sites in Elizabeth Gardens should be acquired for community waterfront open space purposes and for a recreational harbour.

If multiple housing development goes ahead on the motel properties, the developers should be required to construct or contribute to the construction of breakwater - islands using excavated material from housing sites. Such a development could provide for very attractive water-oriented housing in conjunction with boating facilities. In addition, developers should be required to provide public waterfront access as described in Volume I, Chapter 8.

Anchorage Site

Mixed commercial residential development of relatively high density is an appropriate use of the waterfront in carefully selected locations. The waterfront end of a main commercial street is such a location, and we favour the construction of a focal development on the Anchorage site (B 32), provided that the policies set out in Volume I, Chapter 8, are carefully adhered to. In this strategic location, visual characteristics and public access along the shore and through the site are extremely important. Shore protection must be carefully designed to link with adjacent protection and to avoid scouring effects on adjacent properties. Excavated material from this site could be used for construction of proposed island breakwaters at Spencer Smith Park (B 33, 34). "Coverage" calculations for this site should be based on land owned by the developer; leased water lots should not be counted as part of the property.

Joshua's Creek Park

Joshua's Creek Park (0.1) is the waterfront portion of a proposed parkway belt between Oakville and Mississauga; it is proposed to be a regional waterfront park for extensive recreation uses such as golf, riding, nature trails, ski trails and boating. To provide for these activities a considerable waterfrontage should be acquired through joint planning with the Regional Municipality of Peel and with Ontario Hydro who own a large tract of land in the area.

Fifty Point Conservation Area

Fifty Point Conservation Area (S 27) is the water-front portion of a suggested parkway belt between Stoney Creek and the Regional Municipality of Niagara. The present area should be enlarged to provide for a variety of extensive recreation uses, possibly including camping, boating, picnicking, riding and ski trails. Fifty Road should be included in the park to provide direct and easy access from the Queen Elizabeth Way and from areas to the south. To make Fifty Road an attractive park entrance road, housing should not be permitted on either side of the road. If westward expansion of the Park is difficult to achieve, joint planning with the Regional Municipality of Niagara should be commenced, in order to expand the Park eastward.

Confederation Park Expansion

The eastward expansion of Confederation Park into Stoney Creek (S 1) is intended to provide for additional camping area in conjunction with the existing trailer park (H 49). The proposed area, (S 1) is particularly appropriate for camping because of the two inland water bodies and proximity to the existing camp administration building. If this expansion is not achieved, additional camping space will probably have to be provided elsewhere. Fifty Point Conservation area would be a possible alternative site, but it is too remote for campers to take full advantage of proposed attractions on the Beach or in Hamilton.

Recreational Harbour in Halton Region

We have been asked, "Why build harbour expansions into the lake, why not use the rivers and streams"? The difficulty is that the streams in Halton are quite narrow and shallow and contain valuable wildlife habitats close to the creek mouths. Harbour expansions in or near these areas should be discouraged because they would be environmentally damaging to vegetation and wildlife.

Bronte Harbour

The proposed expansion of Bronte Harbour to provide for an additional 450 boats, will require about 19 acres of additional land for land-based facilities. The most appropriate location for these land facil-

ities is on the high land west of the harbour (0 51, 52). If this land were used for any other purpose, the potential of Bronte Harbour for recreational boating would be severely reduced. The alternative would be to create new land on the east side of the harbour (0 48, 49).

The proposed expansion of Oakville Harbour to accommodate an additional 600 boats during the next 15 to 20 years will require about 25 acres of additional land area. The most suitable location for this expansion is along the west side of the harbour in conjunction with island breakwater developments at 030. Limited expansion is possible on the east side of the creek at 027; the eastern part of the harbour area (023) should be preserved for more passive activities such as walking and picnicking.

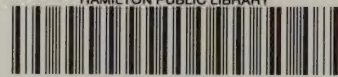
Removal of Berm in Hamilton Harbour

While there appears to be general agreement that no further filling will be carried out at H 30, 32, 33 it would be wise to remove the existing berm to ensure that no commercial or industrial development could occur there. Recreational development would be inappropriate due to the proximity of the highway.

New Regional Boundary in Hamilton Harbour

The present regional boundary in Hamilton Harbour follows the north shore of the harbour. This means that any municipal planning control over the water-side of Burlington's Harbour Waterfront belongs to Hamilton and the Regional Municipality of Hamilton-Wentworth. As the use of water for environmental and recreational purposes increases in importance, planning controls over the harbour will increasingly concern the people of Burlington and Halton Region. One step towards a more equitable distribution of decision making power would be to move the regional boundary to a central location in the harbour.

HAMILTON PUBLIC LIBRARY



3 2022 21335923 1

